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### *Original Articles*

#### SOME IMPRESSIONS OF THE WORK IN LONDON.\*

CHAIRMAN'S ADDRESS.

CHARLES H. BAKER, M.D.  
BAY CITY, MICH.

It was my intention to bring to this Section some ideas gained by study of the clinics in several of the great cities of Europe. Circumstances prevented my doing anything of note in clinics, until the week of the Clinical Congress in London and that was interrupted upon the last day by the explosion of the war cloud which had been gathering for years over Europe.

Needless to say, all thought of clinics gave way before the anxiety of trying to bring together, with all lines of communication shut off, the members of a party separated in Germany and England. I trust you will pardon the admixture of clinical and personal experiences and hope I may bring a note of interest and novelty into our meeting.

First of the impressions, one gains of the really great men in the English hospitals, is that they are a lot of good fellows, free from buncombe and painfully modest. Now and then one is a ready talker but the most of them, however, much they know, are poorly equipped for displaying their attainments. Generally slow and very painstaking, they give the impression of want of deftness with their hands which is the prevalent American accomplishment.

From the sponges used to the complete hospitals, nearly everything is twenty-five years behind the times, although in places, like King's College hospital, the most up-to-date equipment is found in use. Technic was surgically far from faultless and frequently absolutely bad.

This seemed the impression of most of the men I talked with who were accustomed to our own work, so that I came away more than pleased with the position our clinics hold in the surgical world. Chloroform-ether or plain chloroform appeared the anesthetic of choice and only twice did I see pure ether or nitrous-oxide anesthesia attempted, and in both these chloroform finished the work.

Given by the hand ball and bottle method, chloroform anesthesia seemed robbed of most of its danger and, I believe, both from observation of its use there and my own experience with it, that if the statistics could be compared between this method of use and ether by the drop method, that this would advance chloroform into the region of safe anesthetics—particularly in children.

Sea-sponges were in quite general use and one could not help wondering how they secured even approximate antisepsis. Nowhere were there any mechanical suction pumps to remove blood and secretions to be seen, and in fact, mechanical aids were conspicuous by their absence in most clinics; simplicity and the smallest possible variety of instruments adequate for the needs of the operation being the rule.

Few of the operators gave any heed to the purpose of our visit, which was to see, and their arrangements for showing what they were doing were extremely bad. Apparently myopia was common among the assistants—at least judging by the proximity they found necessary between their eyes and the field of operation.

A few out of the better-known men had made some effort to accumulate cases to illustrate the advance they claimed in medicine.

Having knocked sufficiently, I wish to mention a few things I saw worth while reporting. Four years ago Dr. Hill showed me some remarkable radiograms of results he had with radium in malignant stricture of the esophagus and the same work is going on and good results being had, using large amounts of radium. The

\*Read before Section on Ophthalmology and Oto-Laryngology M.S.M.S. 49th Annual Meeting, Lansing Sept. 10, 1914.

radium was contained in a tube of lead enclosed in a nickel shell, about  $\frac{3}{4} \times \frac{1}{4}$  inch, screwed to the end of an aluminum wire. Hill's slotted esophageal tube was passed to the stricture under either local or general anesthesia, the radium was passed down to contact with the growth, and the wire, to which it was attached, brought to the angle of the mouth, bent to a right angle, and then, following the contour of the cheek, was brought around back of the neck, being held in place by surgeon's adhesive and allowed to remain fifteen hours. This is repeated in six weeks, and their reports show pretty general improvement both in patency of the stricture and relief of pain.

In mastoid work, the only novelties I saw were the use of zinc chlorid solution 40 to 60 grains in one ounce of water, for checking hemorrhage when venous oozing was troublesome, applied on a gauze pledget held in firm contact for a minute or so. Sinuses that were septic and hard to cleanse were gently washed with emulsion of soap made as follows: soft or hard soap aa gr. 60, olive oil m. 60, aqua distill. 1 pt. ft. emulsio.

The hair was best confined and protected for the mastoid operation by a towel folded and pinned, diaper fashion. It was surprising how easy this was to apply and effective it appeared.

Submucous resection was done under general anesthesia which was chloroform given through the mouth anesthetic gag, with the hand ball vapor bottle, preceded by scopolamine and morphine. The dissection was rapid and one could not help wondering how often perforation occurred. Suturing of mucous membrane after operation was common, and packing was generally sponge rubber which was cut into a rectangular prism plug and retained for twenty-four hours, placed only on the side of the slit in the membrane, leaving one nostril for breathing. The claim was that hemorrhage was not more common or severe than when both sides were packed while the patient's comfort was greatly enhanced.

Local infiltration anesthesia was also done with novocain and adrenalin, the claim being made that dissection was easier after its use.

One interesting and amusing incident was the symposium, at the Savoy hotel, on cleft palate at which Dr. Brophy, of Chicago, presented three of his patients imported from Chicago for the purpose; followed by three of Dr. Davis', of London, himself a cleft palate subject, who held diametrically opposite views concerning the mode of operation from those of Dr. Brophy.

Judging by the speech alone the latter had quite as good a case for his method as the former. His method of suturing in cleft palate appealed to me as the best thing I ever saw in this operation, the rubber tubing to reinforce the sutures being surely less irritating than any form of plates. When ready to suture, horsehair was the material, a short section of small rubber catheter was threaded on the suture which was then passed through the edges and across the cleft. A second piece of tubing was threaded on and the suture passed through the edges and back across the cleft and the loose ends tied sufficiently tight to approximate the denuded edges. Tension was thus elastic and distributed along the edges of the cleft rendering the chances of cutting out much less than with the unguarded suture and less bulky than plates.

Sir William Thompson's cases of laryngofissure for malignant disease of the larynx and the wonderful speaking ability acquired were surely worth seeing, but a description of his methods requires an entire paper.

#### A CASE OF "SQUIRREL PLAGUE" CONJUNCTIVITIS IN MAN.\*

DERRICK T. VAIL, M.D., F.A.C.S.  
CINCINNATI, OHIO.

It is believed that this is the first report of infection of the human eye from the virus of a plague-like disease among certain rodents, notably the California ground squirrel, and now known as "Squirrel Plague."

The case which I bring to your attention in this report, presented such unique, alarming and peculiar ocular symptoms that it was impossible from anything written in ophthalmic literature to render a clinical diagnosis.

I have to thank Prof. Wm. B. Wherry, of Cincinnati, who has won renown as a bacteriologist working for the government in the plague-stricken district of California during the recent epidemic of bubonic plague there, for the diagnosis. Without his splendid, accurate and convincing laboratory work, this case would have passed into oblivion, unrecognized and undiagnosed.

The present paper will embody the following:

First. A short historical review of California squirrel plague, which existed simultaneously with bubonic man plague in 1900-1910, and which was at first thought to be identical with it.

\*Read before Section on Ophthalmology and Oto-Laryngology M.S.M.S. 49th Annual Meeting, Lansing Sept. 10, 1914.

Second. A report of my case of eye-infection from the known bacillus of squirrel plague and a sketch illustrating the appearance of the case at its climax.

Third. A brief report of the laboratory work of Prof. Wherry, Bacteriologist, and B. H. Lamb, senior student Ohio-Miami Medical College, Cincinnati, who diagnosed and proved by culture methods, animal inoculations and experiments that the ocular disease in my case was due to the so-called *Bacillus Tularensis* of McCoy and Chapin, or the "Squirrel Plague Bacillus."

#### HISTORICAL DATA ON CALIFORNIA SQUIRREL PLAGUE.

On December 8, 1908, the *Journal of Infectious Diseases* (Chicago) published an article by Dr. Wm. B. Wherry, at that time bacteriologist for the San Francisco Board of Health and temporary assistant surgeon of the United States Public Health and Marine Hospital Services, located at Oakland, California, on "Plague Among the Ground Squirrels of California." It is from this article that the following historical notes are gleaned:

The bubonic plague first appeared as an epidemic in the United States at San Francisco in 1900. The presumption was that plague-infected rats infesting in-coming ships from the orient, found their way ashore and that they constituted the source of infection for the human cases through the fleas that they harbored.

The human epidemic was at first practically limited to the inhabitants of China Town, San Francisco. In 1900 there were twenty-two fatal cases, in 1901 there were thirty cases with twenty-five deaths, in 1902 there were forty-one fatal cases, in 1903, seventeen died, in 1904, nine cases with eight deaths. All these cases were located in San Francisco.

The United States officer in command of plague suppression was Surgeon Rupert Blue, the same who is in charge of the bubonic plague situation in New Orleans at this present writing (1914).

Blue first suspected in 1903 that the plague which was destroying ground squirrels in such great numbers, as was being reported from many parts of the country about San Francisco, was nothing other than bubonic plague and he so published his suspicions to the authorities at that time, but was unable to secure dead animals for proof. Soon, however, human cases of plague-like infection began to appear in coun-

try districts, in which no reasonable mode of conveyance other than through squirrels seemed plausible.

Take the case of Charles Bock, a country blacksmith who came to San Francisco (Aug., 1903) from a neighboring village, and died of the plague. Surgeon Blue visited his town and learned that Bock had shot ground squirrels three or four days before his illness began. The following September (1903) another victim from another part of the county died from plague, a man who had been living in a railroad camp thirty miles away from civilization, and it was learned that these rough laborers often killed and ate ground squirrels. In 1904 rural cases continued to be reported here and there, and Dr. Blue, who was keen on the suspicion that ground squirrels were furnishing the infection, conducted a series of experiments through the aid of Assistant Surgeon Donald Currie, bacteriologist for the plague laboratory, and proved that the ground squirrel was very susceptible to plague infection, both by inoculation and direct contact. Blue then (1904) sent a man to investigate the county of Contra Costa to ascertain the truth of the many reports that came through various sources that the squirrels were being exterminated by a plague. This agent reported that the farmers were everywhere rejoiced at the disappearance of the ground squirrel. He also learned that the squirrels had been suffering from an epizootic.

It was then learned by another investigator (Past Assistant Surgeon J. D. Long) that armies of ground squirrels were seen at different times between the years 1903 and 1905 to be migrating across the country. Farmers had endeavored to secure sick squirrels to carry home to spread the infection. They burrow the ground, feed on grain and multiply so rapidly that they had become a great pest. In fact, one man offered a bounty of \$20 for a single sick squirrel.

After the earthquake of 1907, bubonic plague cases appeared in alarming numbers in San Francisco. There were 156 cases with seventy-eight deaths and country cases continued to appear, so that Blue directed his men to trap and collect rodents from Contra Costa county that a thorough search for plague might be made. Four hundred and twenty-three squirrels were sent in and among them were found four genuine cases of glandular suppurations in sick squirrels.

In spite of this many doubted that the disease in man was contracted from squirrels.

Soon, however, a case appeared in Los Angeles, which proved the direct communicability of the infection from squirrel to man without the intervention of fleas or biting insects. A boy 10 years old, living in Los Angeles, found a sick ground squirrel near his home. Being moved with compassion and thinking he would take it home, nurse it and make a pet of it, he picked it up, but the animal bit him on the finger. On the fourth day after he was taken sick with fever, delirium, etc., and the glands of the axilla on that side became swollen and painful. The abscess in the armpit was aspirated and G. W. McCoy, who was studying the case, found by experiments on guinea pigs and rats that the organism was similar to bacillus pestis. Suppurative glands appeared elsewhere, but the boy finally recovered. In view of the fact that Currie had demonstrated that the saliva from the mouth of an infected squirrel was laden with infection, due most likely to the influence of plague pneumonia that was demonstrated, it is beyond question that this boy was directly infected from the bite of the squirrel and not from flea bites.

The experiments which proved infection by direct contact and which were carried out by Currie in 1904 were as follows:

Out of six healthy squirrels that were caged with plague-sick squirrels, three died of plague. Currie rubbed the shaved abdomen of a healthy squirrel with plague-infected spleen and placed it in a cage with two other healthy squirrels. In three days the infected squirrel died of plague and the spot which had been rubbed showed plague-dermatitis. In nine days one of the two healthy squirrels died of plague and in thirteen days the other likewise died.

It was now thought by many up to this time that squirrel-plague and man-plague were one and the same disease. This, however, proved untrue, for Past Assistant Surgeon George W. McCoy, of San Francisco, finally came out with a classical paper on the subject (see *Journal of Hygiene*, 1910, page 489-601) and proved among other things that there was a *distinct difference* between true bubonic plague and squirrel plague, the latter being less violent and the bacillus causing it being different from the true bacillus pestis, although closely allied to it (see also *Journal Infectious Diseases*, 1909, page 676) and that fatal squirrel-plague is not identical in its pathology with fatal bubonic plague.

Finally in 1911 (see *Journal Infectious Diseases*, 1912, page 71), McCoy and Chapin

identified the germ of squirrel-plague, grew it on egg yolk culture, proved its entity, described it fully and named it *Bacillus Tularensis* after the county Tulare, in California, in which the disease was first observed. They state "the essential pathological lesions (of fatal squirrel-plague infection in rodents) are many whitish or yellowish caseous granules in the spleen and liver." Caseous modules also appear in the lymph glands.

#### REPORT OF MY CASE OF SQUIRREL-PLAGUE.† INFECTION OF THE HUMAN EYE.

E. E., male, aged 28, referred to me on November 24, 1913, by Dr. Paul DeCourcy, of Cincinnati, on account of an acute and violent inflammation of his left eye.

*Occupation*.—Meat cutter in a restaurant.

*Family History*.—Negative.

*Personal History*.—Measles at age of 7, mumps at age of 7; no other illness. Denies venereals.

*Present Illness*.—Three days ago left eye became inflamed and swollen. Tried medicine prescribed by a druggist, but eye became rapidly worse. The lid margins were agglutinated of mornings. Notices a "sore lump" in front of the left ear. Eye discharges much watery secretion. Has no pain; vision unaffected.

#### STATUS PRAESENS.

*External Inspection*.—Right eye, normal.

*Left Eye*.—Marked redness and swelling of both eyelids.

Intense chemosis is present.

Eye discharges muco-watery secretion.

Lashes are matted tuft-like.

General appearance of eye suggests gonorrheal ophthalmia.

The pre-auricular gland on that side is swollen to the size of a small cherry and is tender to touch.

Cornea, clear.

Tension, normal.

Iris, normal.

Pupil, normal in size and reaction.

Dioptric media, clear.

Ophthalmoscopic examination, negative  
Vision, normal.

Palpebral conjunctiva: On evertting the eyelids, the seat of disease is revealed. The conjunctiva is riddled with about ten discrete, deep, round, yellow necrotic ulcers, that run clear through the substantia propria of the conjunctiva quite to the tarsus. There are six such round ulcers over the upper tarsus and four at least over the lower tarsus. The ulcers appear punched out, but filled with golden yel-

†NOTE: "Squirrel Plague" may mean either of two diseases (1) true Bubonic Plague due to Bac. Pestis or (2) Plague-like due to Bac. Tularensis. This paper deals with the latter.

low necrotic plugs. Size vary from 6 m. m., the largest, which exists near the upper edge of the tarsus of the upper lid, to about 1.0 m. m. The surrounding conjunctiva is deep red, very soggy and swollen but does not bleed on being wiped with a wet cotton sponge. The necrotic plugs in the beds of the ulcers cannot be wiped away. The contrast between the deep red color of the conjunctiva and the brilliant golden color of the ulcers is as striking as a turkey-red calico dress with yellow "polka dots."

A smear was taken at once to search for the gonococcus, but none found. Cultures in nutrient agar and blood serum made, but nothing beyond mixed infection revealed after forty-eight hours. Patient warned as to the likely contagious nature of his trouble and was taught how to cleanse his eye and treat himself with the antiseptic and astringent washes and the yellow oxide mercury ointment which were prescribed. Diagnosis of "Parinaud's conjunctivitis" tentatively made.

November 25—next day. Eye looks worse, patient pale, temperature 100, preauricular gland more swollen, the lymph glands of the anterior triangle of the neck and submaxillary region of that side are easily felt to be enlarged and are tender. Diagnosis of Parinaud's conjunctivitis withdrawn on account of the ulcers. Too acute for tuberculosis and certainly not chancres or syphilis.

November 28. Patient is losing weight rapidly, looks cachectic and sick, temperature 102, glands of the left side face and neck are conspicuously large and now there is seen a discrete pustular eruption six or seven in number and 4 to 5 m.m. in size, something like the pustules of varicella, located on the left temple and malar region. The appearance of the left eye is not improved; cornea is, however, brilliant and vision unaffected. The left nostrils discharge a watery mucus freely. The left turbinated bodies are swollen and red. On account of the nasal symptoms and the pustular eruption on the left malar, the diagnosis is changed to "Glanders or Farcy" and patient urged to go to the Cincinnati Hospital, where he could get the benefit of proper treatment and laboratory diagnosis.

December 1. Patient did not go to the hospital; objected to leaving his family. Wants to continue treatment at my office. A new symptom has developed since two days ago. Infection of the left lachrymal sac with every evidence of abscess formation. The ulcers of the conjunctiva remain about the same in appearance, but are slightly more numerous. They are not epithelial ulcers such as we see in herpes, but perforate the conjunctiva quite to the tarsus. *Evidently the solitary lymph nodes of the conjunctiva are the seat of the necrosis.* The accompanying sketch was made to illustrate the appearance of the case at this time. His family physician, Dr. DeCourcy, finally persuaded him to apply to the Cincinnati Hospital for treatment. Dr. Robert Sattler was on duty at that time and we filed the following clinical memoranda:



Right Eye.—Normal.

Left Eye.—Lids puffed and reddened.

Swelling size of hazel nut at inner canthus (purulent dacryocystitis.)

Ocular conjunctiva much congested.

On eversion of the lids the palpebral conjunctiva much thickened, roughened and reddened.

Conjunctiva ulcers are present.

Pressure on tear sac, which has consistency of well-filled bladder, does not evacuate it into the eye or nose

There are a half-dozen large pustules between the left eye and ear.

The anterior auricular and anterior cervical glands and those about the angle of the jaw are enlarged.

There are no glandular enlargements at the right side of the face.

Lungs.—Negative.

Heart and Circulatory Apparatus.—Negative.

Abdomen.—Negative.

Extremities-Genitalia.—Negative.

December 9. Abscess of the tear sac incised, discharging yellow, creamy pus.

December 10. Drainage from the abscess has ceased. Conjunctival ulcers gone. Ocular condition much improved, but the preauricular and other glands remain enlarged.

December 11. Patient discharged, improved. The temperature chart is characteristic of a general septic infection, highest being 102.6, evenings of December 4 and 5, but the morning temperature never below 100 until after December 5.

Several unsuccessful attempts were made to see the patient after he left the Hospital, Student Lamb calling at his residence several times and I sending him three letters, asking him to call and see me. He wrote me he was well and back at work, but we never saw him since. Evidently he had had enough of the doctors.

HOW COULD THE INFECTION OF THE CALIFORNIA  
GROUND SQUIRREL PLAGUE FIND ITS WAY  
INTO E. E.'S LEFT EYE IN CINCINNATI?

This is a question that is hard to answer definitely. It has been proven by various students of the disease, Blue, McCoy, Chapin, Currie, Long, Wherry and others, that all rodents are susceptible to infection by direct contact, squirrels and rabbits particularly so. Three facts are significant:

1. Wherry in his last article just published (see *Journal of Infectious Diseases*, September, 1914) says that "a year previously (to this case) we had heard from a hunter that wild rabbits were dying in large numbers across the Ohio River in Kentucky." Moreover, this man was infected during the hunting season when the market is open to the sale of rabbits and I, myself, (being a hunter) was interested in reading in a Cincinnati daily date about November 29, 1913, a note from rabbit hunters in the vicinity of Cincinnati, stating they were finding large numbers of dead rabbits in the fields and the opinion that they were "being exterminated by a plague of some sort."

2. Health Officer Landis, of Cincinnati, learning the markets of the city were selling rotten rabbits, investigated and found large quantities of putrid rabbits on sale at five cents apiece. He rightly condemned all of them and reports that 36,420 pounds of decayed rabbit were thus seized and destroyed between November 1 and December 6, 1913. My patient was infected in the height of this season.

3. My patient was by occupation a meat cutter in a cheap restaurant located in the tenement and slum district of the city close to the markets. The inference is fair that rabbits affected with caseous buboes came to his table for cutting, that he held the diseased meat in his left hand, cutting with the knife held in his right hand and that he introduced the poison into his left eye from his left finger. We have no proof for this, but it would pass for "Sherlock Holmes" evidence.

LABORATORY EXAMINATION.

We come now to the Proof of Squirrel Plague Infection in this Case, by Prof. Wherry, Bacteriologist and Senior Student B. H. Lamb.

A full detailed report of Prof. Wherry's investigation, culture methods, inoculations, animal experimentations and post mortems in connection with the case is published by Wherry and Lamb in the current issue of the *Chicago Journal of Infectious Diseases* (September,

1914), illustrated in colors and photographs by Prof. Wherry.

"Guinea pig No. 1 received on December 4, 1913, an intra-peritoneal injection of scrapings from a conjunctival ulcer from the patient's eye, suspended in normal sterile salt solution." Died December 10. Post mortem shows acute pneumonia. the spleen and liver are congested and enlarged and show numerous scattered foci of necrosis. No bacteria found on various smear preparations variously stained. Various culture media remained sterile as to aerobic and anaerobic bacilli for a month.

"The disease was kept going through a series of guinea pigs while isolation experiments were in progress;" nothing definite was found, but "after passing the virus through twenty-four animals, we (Wherry and Lamb) became acquainted with the work of McCoy and Chapin (see above) and by using the *coagulated egg-yolk*, on which they were able to grow *Bacillus Tularensis*, we isolated what we believed to be the same bacterium."

The Berkefeld filter prevented the germ from passing through as proven by experiment injections on guinea pigs. This corroborates McCoy and Chapin's findings, "while guinea pig No. 20, used as a control, was injected subcutaneously with two cubic centimeters of the unfiltered extract. It died in three days with typical lesions and *Bacillus Tularensis* was isolated in an ovomucoid-yolk culture from an inguinal bubo."

The tests and measurements of the bacillus by Wherry tallied very closely to those of McCoy.

In carrying out their investigations to prove this case, Wherry and Lamb used "forty-nine guinea pigs, three Belgium hares, three white rats, three kittens and one pigeon." "The guinea pigs, as a rule, succumbed on the fourth or fifth day after cutaneous inoculation with spleen juice or when pricked in the eye with an infected needle" and again simply dipping a fine needle into the spleen of a dead animal or into a culture and pricking the ocular or palpebral conjunctiva of rabbits or guinea pigs results in the production of multiple areas of necrosis on the palpebral conjunctiva, *just like those in the human case* and is followed by septicemia and death in a few days.

Wherry showed me the head and viscera of rabbit No. 1, which had been pricked in the conjunctiva, as above suggested. The eyelids were everted on tooth-pick stays and presented the same typical round necrotic ulcers my case

had presented; moreover the lymph glands in front of the rabbit's ear and down the side of its neck were greatly enlarged.

The white rats inoculated intraperitoneally died in two days or less. The kittens survived. *An infected emulsion was dropped in the healthy eye of guinea pig No. 38. It died in four days time. The conjunctiva presented the same round ulcers and the lymphatic glands of the neck were markedly involved.*

Guinea pig No. 34 was fed on most of the spleen of a dead guinea pig. It died in three days time.

Wherry and Lamb conclude their article by stating "We wish to call attention to the fact that this recently discovered disease of rodents is apparently sufficiently virulent for gray mice to warrant the presumption that it may some day take its place along with *Bacillus Pestis* as a menace to man."

From the evidence submitted, I think we may make the claim beyond doubt that the case of E. E. was one of *squirrel plague ophthalmia* and I believe the first case on record.

24 East Eighth St., Cincinnati.

#### THE INFERIOR TURBinate; ITS FLAP RESECTION TO REDUCE IT WHEN OBSTRUCTIVE.\*

OTTO T. FREER, M.D.

CHICAGO, ILL.

Three years ago I described, as I then performed it, the operation here set forth, but I have felt the need of again bringing it to notice because I have improved some of the details of its execution, because it has not received the attention which I know that its advantages deserve and because it has been asserted, by some who have tried it, that the operation can not be performed. It is an exact surgical procedure in which incised wounds in mucous membrane and bone and complete covering of exposed bone by mucous membrane, give least reaction with quick and smooth healing and the preservation of enough of the turbinate to continue its moistening and dust catching function, while permanently preventing its obstructive turgescence. In this it is superior to the complete removal of the turbinate with the saw, punch or scissors which leave uncovered bone to granulate over with prolonged scabbing and the danger of severe bleeding many days after the operation. As for some of the rough and forcible manip-

ulations now employed in place of surgical art to remove inferior turbinate obstruction, such as fracturing the turbinate over against the outer nasal wall, or crushing it, these methods represent a surprising lack of comprehension of the anatomy and surgical needs of the conditions encountered and are ineffective because in spite of the injurious violence employed, they leave the tough and resistant swell-body of the turbinate entirely or enough intact to continue to fill with blood and so block the naris.

Resection of the inferior turbinate is demanded when chronic intumescence, permanent or remittent, or simply chronic hyperplasia make it a constant or nearly constant obstacle to respiration.

Chronic intumescence is an exaggeration of the physiologic function of the lower turbinate which makes it fill with blood or empty itself according to the varying demand for moistening of the inspired air offered by the changing humidity of the atmosphere, this physiologic filling and emptying of the turbinate lacunar veins being, however, always within limits unobstructive of the air current. Irritation of the nasal mucosa by hot, dry air, by dust or other irritant, or conditions making the mucous membrane abnormally sensitive, such as scabbing, eczematous states of the coverings of the front of the septum, will also by reflex cause the cavernous tissue of the lower turbinates to swell in a protective manner in order to close the irritated naris against the air current. Such swelling of the lower turbinates, however, usually disappears with its cause, but in many persons especially those with general venous congestion due to an inactive life or a florid constitution, or in people with a nervous temperament, the response to even slight irritants in the nose, whether dry air, dust or pollen, is extreme, the turbinate puffing up until it fills the naris from its floor to the middle meatus and shutting off all or nearly all of the air current. Finally this turgescence becomes remittently chronic and habitual, occurring independently of irritation. The process is apt to be accompanied by symptoms of irritation of the ethmoidal nerves and sphenothmoidal nerves and their connections such as headache, lachrymation, sneezing, asthma and so forth. The intumescence is usually unilateral, changing from naris to naris and is worse at night, when the head is charged with blood in the prone position. While many of these patients have hay fever, most of them have the intumescent condition during the

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whole year. Coming for inspection in periods of remission, as such patients often do, the nares may be found entirely clear, the lower turbinates retracted and the whole complaint to the inexperienced may seem groundless until the nose is seen in its intumescent state. As the condition is purely a vasomotor one and not catarrhal, it is readily understood that the usual antecatharral topical applications are of no effect.

The seat of the exaggerated reflex in these

air current with consequent excess of drying of the epithelium, deposit of dust and air friction, the response being a protective reflex swelling of the inferior turbinate in this, the constructively roomy nostril, the use of which is thus limited. The increased respiratory suction needed in such cases to get enough air through the nose also favors chronic distension of the veins of the turbinate, placing them as it were under a cupping glass. In time, in these cases, due to the many years of duration of the

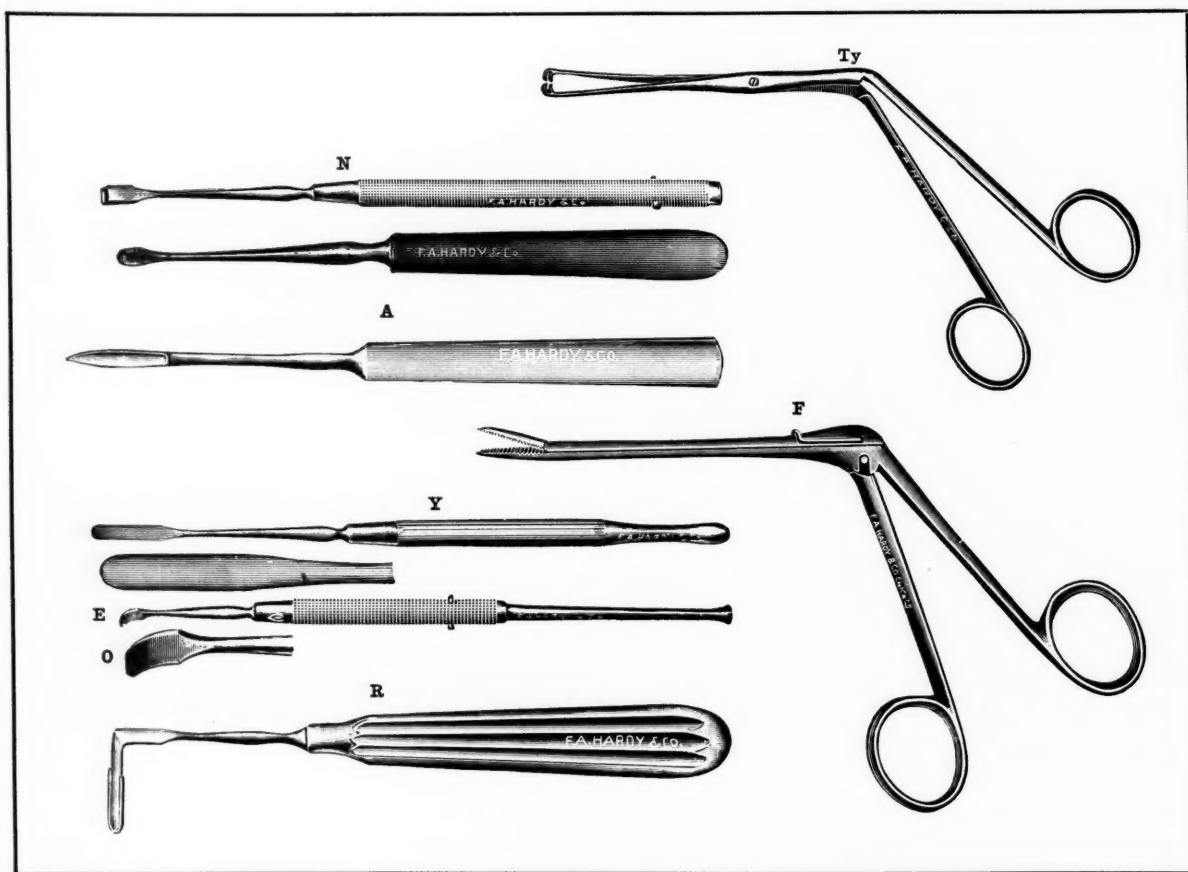


Fig. 1. Instruments for the operation. R, new shortened nasal retractors; A, long knife used for the incision and to elevate the flap from below; O, raspatory; Y, long elevator, blunt and sharp; E, knife for use in elevating the mucosa-periosteum; N, chisel; F, Noyes' heavy nasal alligator forceps for grasping the partly detached turbinated bone; Ty, Tydings' tonsil forceps for seizing a voluminous posterior end of the turbinate for its excision.

purely irritative cases seems to be chiefly the lower turbinate, for it has been my experience that its resection has often removed not only the obstructive swelling but also the sneezing, headache or asthma likewise dependent upon the reflex.

In an other class of cases the nasal irritability and the intumescence is symptomatic of a fundamental narrowness of one naris acting as the primary cause of the condition. The most frequent reason for such narrowness is a deflection of the septum sufficiently great to nearly or entirely occlude one naris. Here the other, open naris has to transmit all or nearly all of the

conditions, there may be some genuine hypertrophy of the lower turbinate, but, as a rule, it shrinks to a normal size upon the use of adrenalin, showing that it is an obstacle to breathing merely because of its turgid state, a state which, however, usually outlasts its primary cause, the deflection, even after the latter has been corrected. In contrast, the lower turbinate upon the side of the deflection, being excluded from the irritating effect of the air current by the deflection, is usually retracted and stays so after the deflection has been removed.

The condition is different in cases where a moderate unilateral deflection merely somewhat

narrows one nostril or a sigmoid deflection both nostrils. Here there is an excess of air friction in both nares so that such deflections are apt to be accompanied by intumescence of both lower turbinates.

In many mild cases of chronic intumescence of the lower turbinates due to reflex irritation, the swelling may be much diminished by the use of oil vaseline sprayed into the nares to protect the epithelium, lessen evaporation, drying of the epithelium and the contact of dust. In cases where the anterior nares are dry and thin scabs form upon the turbinates and septum an ointment of boric acid thirty grains, lanolin one half ounce, oil vaseline one half ounce will greatly reduce turbinate reflex intumescence. Where turbinate intumescence from whatever cause, has, however, become chronic and inveterate, nothing but surgical reduction of the turbinate will ensure proper nasal breathing.

True hypertrophy as a cause of enlargement of the inferior turbinated body is much rarer than the simple venous intumescence described. Intumescence is, however, often mistaken for true hypertrophy, especially in those cases where the posterior ends of the lower turbinates fill up the choanae and project into the nasopharynx as globular, nodular tumors. While such swellings may be hyperplastic they are oftener merely great distentions of the posterior ends of the turbinates with blood and disappear completely upon the application of adrenalin.

In true hypertrophy the turbinate usually feels somewhat firm to the probe while in intumescence it sinks into the enlarged turbinate as into an air cushion. In hypertrophy the surface of the turbinate is often nodular, verrucous or irregular while its color is usually pale. The chief means of distinction though is always the application of adrenalin which causes only moderate shrinkage of hypertrophy while it causes complete disappearance of intumescence.

There are cases of tertiary syphilitic inferior turbinate hypertrophy which deceptively simulate ordinary hypertrophy in appearance. In the case of syphilis, however, close inspection will usually discover a shallow ulcer somewhere which will disclose the nature of the disease. The idea that tertiary syphilis is always rapidly destructive in the nose should be discarded, for in many cases it is mild and indolent with only slight ulceration and much hyperplasia.

In simple chronic hypertrophy of the lower

turbinate I have often found that the process had been accompanied by rarifying osteitis with absorption of most of the lower turbinated bone, merely detached thin plates of bone remaining so that the turbinate had become a mere bag of hypertrophied mucous membrane.

#### THE OPERATION.

In employing a new method it is best at first to stick closely to the description of its originator. Variations may be tried later when proficiency is attained. I think that most of the failures to follow the procedure here described are due to thinking its details unimportant. They are the outgrowth of experience and should be closely followed.

The operation is done under cocaine anesthesia and I have never needed a general anesthetic for it. This is chiefly due to the fact that it is rarely needed for children, much more rarely than the submucous resection of the septum. In the case of timid children I should use a slumber narcosis combined with local anesthesia. To show that the operation under cocaine is painless I mention that I have resected both inferior turbinates in a five year old child without general anesthesia.

The cocaine is used in the form of cocaine adrenalin mud, used as I employ it in my operation, the cocaine being rubbed upon the turbinate with a fine swab and in addition upon the region of the external branch of the ethmoidal nerve as it descends from above upon the turbinate. Alypin powder is a good substitute for the cocaine, where previous experience has shown the existence of a cocaine idiosyncrasy.

The patient is placed semirecumbent upon an operating chair, a dental chair, which may be raised and lowered being preferred. The light employed is the Kirstein headlamp. It is the only light which is strictly axial, has a long focus and which will light evenly the whole length of the turbinate, its posterior end and the nasopharynx beyond it being brightly illuminated. The headmirror will not do, it has a focal point of light, not the long searchlight pencil of parallel rays of the Kirstein light, so that, while the close approach needed for the exact vision demanded by the operation leaves the pathway of light obtained from the Kirstein unchanged, it causes dispersion of the rays and darkness in the depths of the naris where the headmirror is employed nearer than its focal distance.

An assistant standing behind the patient's head holds the nostrils open with two of my

improved shortened nasal retractors (Fig. 1, R) which give a shorter and therefore a steadier and gentler hold than the old ones, so that they do not hurt the patient nor fatigue the assistant. The assistant can see the entire operation by looking into the mirror of the Kirstein head-

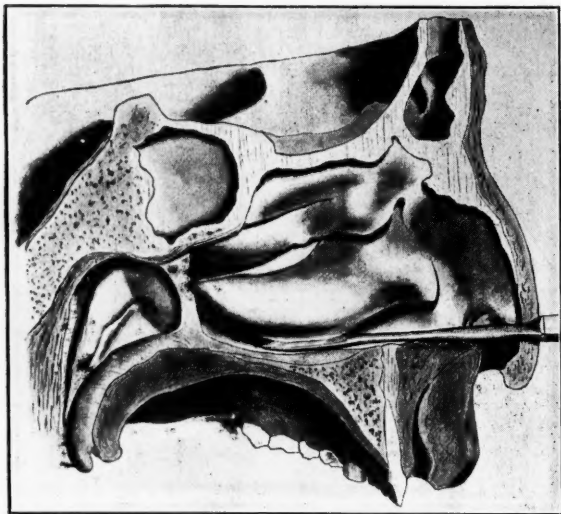


Fig. 2. Side view of the left naris after removal of all but the rearmost end of the septum. The knife is seen in the incision which outlines the flap along the lower border and across the front end of the lower turbinate. Drawn from a specimen.

lamp, as it gives him the same axial and deep vision that the operator has.

In addition to the retractors held by the assistant the operator usually needs a third retractor held in his left hand to pull open the nostril downward in order to permit him to see better along the nasal floor.

In typical cases of intumescence the operation is begun by a horizontal incision to the bone made with the knife (Fig. (1, A) (Fig. 2) from the rearmost end of the turbinate forward along its lower border to its very front, terminating here in an upward sweep by a vertical cut which lies across the foremost part of the turbinate. This outlines the usual flap. In cases, however, where before adrenalin shrinkage the mucosa bags in folds and is obviously very voluminous, a flap outlined in this manner would prove too large and hence the incision is not made along the lower border in such cases but parallel to and above it upon the convexity of the turbinate.

From the horizontal part of the incision the knife is used to elevate upward as much of the flap as possible. The operator then continues its elevation from in front from the vertical part of the incision by means of the raspatory, the sharp elevators or knives (Fig. 1, O, Y, E)

from my septum set. The elevation is not easy as the turbinate mucosa-periosteum with its tough network of cavernous veins adheres to the rough surface of the bone as does the flesh of a clingstone peach to its stone. The raspatory is the instrument especially suited to such work and it carries the elevation of the flap to the rearmost part of the turbinated body and upward over its convexity without much difficulty, once the work is started. When the entire flap is loosened it may be pushed upward out of the way into the middle meatus.

If during the elevation the patient complain of pain, fresh cocaine mud is applied directly to the wound under the flap as it is made.

As the next step the chisel (Fig. 1, N), its bevel looking toward the nasal floor, is supplied to the foremost attachment of the lower turbinated bone, now lying bared to view, and, in the usual case, the chisel is made to follow the line (Fig. 3) of merging of the lower vertical part of the turbinate with its upper horizontal part. According to need the chisel may be made to cut along a higher level and take away a portion of the horizontal part of the turbinate as well. After the thicker anterior part of the turbinated bone has been cut through, the chisel may usually be pushed by hand through the thinner bone behind it to the rear of the turbinate. In cutting the bone the chisel also cuts through the mucosa of the under, concave side of the turbinate, which is thus discarded

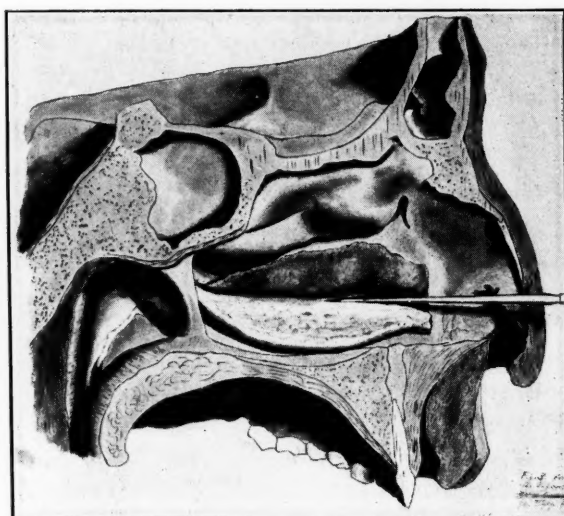


Fig. 3. The same view as in Figure 2. The chisel is seen longitudinally resecting the lower turbinated bone.

for, if retained while merely a part of the bone is submucously removed, the resulting reduced turbinate is flabby and voluminously obstructive.

The chisel used has a very long bevel because the bone to be cut is light and shell like, the

long bevel making the chisel cut cleanly through the bone and with the use of little force. The ordinary abrupt chisel bevel makes the instrument break its way through thin, frail bone.

When severed by the chisel the loosened piece of the turbinate is now firmly grasped with the forceps (Fig. 1, F) and pulled strongly forward, thus pulling taut the soft parts which still hold the partly detached part of the turbinate at its posterior end, so that they may be cut through with the long sharp elevator (Fig. 1, Y). This is introduced alongside the forceps and made to cut upward, downward and around the rear end of the turbinate (Fig. 4).

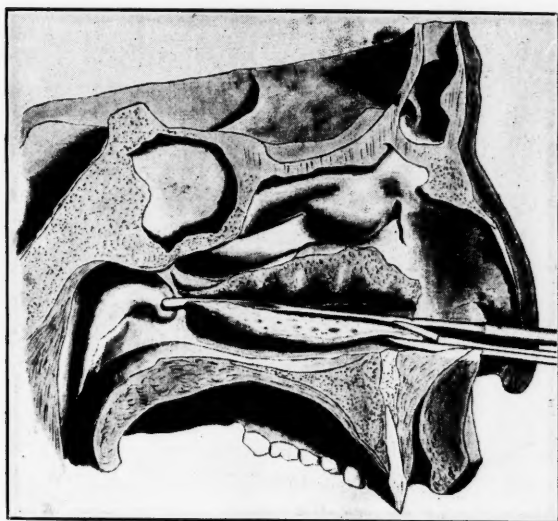


Fig. 4. The same view as in Figures 2 and 3. The front end of the partly detached piece of the lower turbinated bone is pulled upon with the forceps while the long sharp elevator is used to cut loose attached posterior end.

When the last strand is cut through the resected part of the turbinate suddenly comes out of the nose in the grasp of the forceps.

The flap is then smoothed down and operator finds that he has now a reduced turbinate, small enough to ensure against renewed obstruction by swelling, but large enough to retain the function of the turbinate. All bone is smoothly covered by the flap.

The rearmost part of the turbinate must now be inspected and felt with the long dull elevator of my septum set (Fig. 1, Y) because the resection often leaves the mucous membrane cap of the posterior end of the turbinate as a freely movable, pendulous lump which, if not removed, would swell and stop up the rear end of the naris. To take away this cap it is seized with the Tydings tonsil forceps (Fig. 1, Ty) and pulled outward while it is severed at its base with the very sharp knife (Fig. 1, A) resharpened upon a stone if necessary. Indeed,

all of the blades must be kept very sharp and should be touched up for every operation.

The operation is now completed and the nose is packed with my layer packing as follows:

The packing is the one I use in all of my nose operations and consists of strips of Johnson & Johnson's sterilized lint (not gauze) one-fourth of an inch wide and impregnated with dry subnitrate of bismuth powder. The bismuth keeps the strips in the nose aseptic and odorless as long as a week or longer. I was the first one to use bismuth as an antiseptic for nasal dressings and have employed it since the year 1901, describing it in my first paper on the submucous resection of the septum in 1902, several years before the brothers, Karl, Emil and Joseph Beck began its use in their bismuth paste.

The lint-bismuth layer packing has the further advantage that it soon adheres by fibrin to the epithelium of the naris and especially to the wound-line, forming a firm, aseptic seal for the vessels. After three or four days the strips become movable and loose of their own accord and may be readily extracted.

The method of introduction is as follows: Each strip, folded upon itself and pulled taut over the end of my long septum elevator, is carried back as far as the prominence of the Eustachian tube, one folded strip being laid evenly upon the other, until the entire posterior naris is filled from the nasal floor up to the body of the sphenoid bone. This effectually plugs the choana and compresses and seals the vessels at the posterior end of the lower turbinate, where the danger of delayed bleeding is greatest and where it is hardest to control. To place rubber dam or other slippery waterproof membrane, as is often done, over the wound in packing has the disadvantage that there is no sealing of the vessels as described, so that the entire reliance for preventing hemorrhage must be placed upon pressure, a very tight and hence painful packing being necessary, while bleeding is liable to take place in spite of it. Where the wound is sealed with the adherent bismuth lint, only mild pressure is needed to prevent bleeding and there is no danger of accidental slipping out of the packing, an occurrence which has led to severe hemorrhage.

It is unwise not to pack at all, as is advised by some inexperienced writers. The lower turbinate is far more liable to delayed bleeding and for a much longer time than the nasal septum, even for several days. Although the

covering of the bone by the flap makes bleeding much less likely to occur than where the bone is exposed, late bleeding may nevertheless take place from underneath the flap, if it be not held down by the tampon and is especially likely to occur from the rear of the turbinate where it has been necessary to cut off a pendulous posterior end. The delayed bleeding in unpacked cases may be severe, even to syncope. Even if the patient left without a tampon be in a hospital, the suddenness and severity of the bleeding which is likely to occur when the adrenalin and cocaine effect has been followed by vascular relaxation will disconcert an interne, for even an expert rhinologist finds it difficult to pack a nose during a furious hemorrhage. The usual course of events in such cases is an ineffective attempt to plug the posterior nares and the forcible poking into the naris of a loose strip of gauze, while the bleeding continues nevertheless in an alarming way until syncope or the arrival of the rhinologist and proper packing end it. Instead of risking the disagreeable happening described it is much wiser to apply the bismuth-lint layer packing as a preventive than as a cure, although it may be relied upon to promptly check delayed bleeding when introduced.

Since I have used the layer packing combined with flap turbinotomy I have had no bleedings and I do not hesitate to let my patient go to his home. Where, however, as is usually done, the turbinated body is simply amputated, bone and mucosa being cut on the same level, even the layer tampon will not absolutely insure against bleeding, for such an amputation creates a bad stump, the mucosa retracting and leaving the bone and its vessels exposed. After such operations bleeding may take place as late as the ninth day after the operation and long after the tampon has been removed.

On account of the liability to bleeding from the lower turbinate the packing should not be disturbed until the third day. Whatever strips at that time pull out easily may be extracted, but any strip that adheres at all and resists the pull should be left in place until such a time as it will come out easily, even if this be as late as the fifth day. Forcible extraction of an adherent strip may lead to a bleeding that may require an immediate repacking.

When the packing is out the flap will be found to have healed down. The external nostril should, however, be kept closed to the air current for about ten days by a small wad of cotton, frequently changed, in order to prevent the

scabbing and discharge that follow too early a use of the naris. It takes two weeks to heal merely a barked knuckle and it is strange that nose surgeons expect a naris containing a bone wound to be ready for use in a day or two. Too early opening of the nostril to the air current with its dust and germs may in some cases cause suppurative rhinitis with possible sinus complications.

When the patient is permitted to use his nostril, he should be taught to anoint it with an ointment of lanolin and oil vaseline equal parts, with boracic acid forty grains to the ounce. This will prevent scabbing until the tendency to it ceases in a few weeks.

#### DISCUSSION.

DR. SHURLEY, Detroit: Mr. Chairman, Gentlemen of the Section: We are certainly in the era of conservation, prevention and progress and Dr. Freer's paper is decidedly along the line of conservative methods in intranasal surgery. Dr. Freer is an inventive genius in the surgical world. He has designed many new instruments for us, perhaps more than any other member, and there is always an ingenuity and usefulness attached to them. As we become more and more veterans in the field we come down from the use of a great many instruments to four or five.

The problem of intumescent lower turbinate is one of the things that we meet with constantly in the state of Michigan and are called upon to relieve daily. The whole question depends upon the particular operation for the particular case for which it is necessary. I feel that it has a field of special usefulness. A large number of cases are due to some systemic condition of the individual and when this is removed, intumescence disappears. Then again there are a large number of mild cases which are relieved by the careful use of cauterization or some similar method.

We are called upon, then, in a comparatively small number of cases to proceed to what would be a turbinectomy. Personally, I have been satisfied to remove by old methods feeling that patients are satisfied with relief that is necessary for their case.

Dr. Freer's operation as described requires a fairly formidable technic and presupposes an expert at intranasal operating.

DR. L. J. GOUX, Detroit: To me these cases of intumescence have been about as irritating as almost any case that comes into the office. It seems like rather an inconsequential condition. You can treat them and tide them over but it seems to be but a short time when they are in the same condition again.

As this operation is described, the Doctor says he removes the turbinate and the mucosa on the outer concave side. My practice has been in these cases, and it has been very satisfactory, to take off a very small portion of the turbinate bone making sure that I always get the hypertrophied parts. You can remove much or little of the turbinate bone, just as the case de-

mands. By removing only a small portion, you get a firm cicatrix which never swells.

DR. W. H. HAUGHEY, Battle Creek: I would like first, before I say anything about the operation, to thank Dr. Freer for his interest in our section. Dr. Freer came to Michigan two years ago when we first organized and gave us a very good paper and contributed greatly to the success of the section at that time. He has come here this year, very kindly, and I think he can notice growth in the section.

In regard to this operation, I agree with all who have spoken in a great many things. I think the operation is limited in a great many cases as Dr. Freer says, but I think it has a wide use. I have done the work and don't see why one should be afraid to go ahead and do it. We should be sure to follow the technic. It removes only a very small amount of the mucous membrane and that is behind the turbinate.

The other method which Dr. Goux mentioned, in my experience has always left a little exposed bone to heal over which is very slow. The Freer method heals quite rapidly. I think it is well to keep the nose blocked up with cotton but do not for full two weeks as Dr. Freer advises.

DR. BERNSTEIN, Kalamazoo: Rhinologists are much indebted to Dr. Freer for his many contributions of our special line of work. His submucous resection work is alone enough to make him worthy of our gratitude, now comes this important contribution to the surgery of the turbinates which bids fair to add more lustre to his research. However, I am inclined to agree with Dr. Shurley in thinking this can only be indicated in a certain small percentage of cases. The great majority will give us all that we can require by more simple means. I do not agree with Dr. Shurley about the use of the electro cautery; as far as I am concerned that apparatus has gone into innocuous desuetude in my office for a score of years.

There are two things I should like to ask Dr. Freer in his closing remarks: first to give his indications for this submucous resection for the turbinates. The second is to tell us his attitude in regard to syphilis, as a contraindication for any operation in the nose. The reason I ask this latter question is, that at the June meeting of the laryngological section of the A.M.A. a paper was read the trend of which was that no operation be undertaken in the nose till a negative Wassermann was obtained. I believe this is fallacious and impracticable. I know I have through error it is true, operated on active syphilitics and still gotten perfect results.

DR. C. H. BAKER, Bay City: I would like to say a few words in regard to this, if it is the chairman's privilege. In the discussion we have gotten away from the fact that we are discussing Dr. Freer's operation and not introducing others in its stead.

So far as Dr. Goux contends that his operation is just as good as the other, I think that Dr. Freer has one very important point of difference which is, by the formation of his flap he is able to cover over the bone in such a way that there is no scar which may give trouble later on.

Dr. Freer has demonstrated the possibility of leaving packing in the nose for two weeks, which is

quite different from what I have been in the habit of doing. Ordinarily I remove the packing the second day after the operation. Hemorrhage following soon after completion of the operation is due to the relaxation of the vessels from the over-stimulation due to the adrenalin and after twenty-four hours have elapsed, that tendency is gone and the clot which forms is sufficient protection so that I had no trouble from further hemorrhage. I certainly shall adopt Dr. Freer's technic in this operation in those cases for which it seems manifestly suitable, and I think as Dr. Haughey has said that this section owes Dr. Freer a vote of thanks for the interest which he takes in us and the great benefits which his papers always bring us.

DR. FREER, closing: The warm welcome given its guests by the Section on Eye, Ear, Nose and Throat of the Michigan State Medical Society always makes them feel very much at home and desirous of coming to future meetings.

Dr. Shurly's criticism that I create too many new instruments for the operations devised by me does not apply to the flap turbinate resection, for all of the instruments are standard ones, part from my septum set and others taken from the regular stock of instrument houses.

The operation is not, as suggested, one that is rarely called for; on the contrary, it is fully as useful as the submucous resection and I find it a simply indispensable procedure. It has displaced for me the unreliable galvano-cautery with its temporary half results, for which it substitutes permanent relief from the nasal stoppage. The drawbacks also attending the complete ablation of the lower turbinate, such as scabbing and excessive dryness of the nostril, are done away with, for the moisture supplying function of the lower turbinate is preserved by the flap resection. It should indeed supplant the crude sawing, punching or shaving away of the entire turbinate still much in vogue, for these methods not only destroy the turbinate, but leave a bad stump, that is, the mucosa-periosteum retracts from the bone which projects beyond it and becomes covered with crusts, the removal of which may lead to severe bleeding which will not stop, and this bleeding may occur many days after the operation. In contra-distinction my flap smoothly covers the bone with healing by first intention.

Experience has shown me that the bismuth packing, which stays aseptic for a week or more, will stick until the vessels are safely closed, when it comes away easily, lubricated by mucus. I, too, formerly tried to get the packing out in the shortest possible time and thought it an achievement to have it out in twenty-four hours. A few obstinate bleedings however showed me it is best to wait with the last strips, those that lie in contact with the wound line, until they are willing to slip out, and this is usually about the fourth day. The retention of these few strips does no harm, for the naris should not be used for breathing until the tenth day at the earliest, for it takes until the fourteenth day for reformation of the epithelium, and until it is reformed there is apt to be scabbing if the nostril be used for breathing, while the dust infects and irritates the naris. I therefore always keep it closed by having the patient keep a small ball of cotton in

the external nostril until about the fourteenth day.

In regard to Dr. Bernstein's questions I think he will find the indications for the operation in the text of my paper. In respect to nasal operations upon syphilitics, while it is a good rule to avoid them, I agree with Dr. Bernstein that I have seen no bad results from their performance.

## RHINITIS—ACUTE AND CHRONIC.\*

DR. LOUIS J. GOUX, M.D.  
DETROIT, MICH.

Coryza or rhinitis seems to be a concomitant symptom or advance guard of most infectious diseases as well as under other conditions enjoying a separate entity with no relationship to other pathological conditions. In other words, it may exist alone as an acute or chronic condition or it may be a local manifestation of general diseases, infectious fevers, or, as is so well known, may depend entirely upon some neuroses for its origin. Briefly enumerated we have acute rhinitis associated with such diseases as measles, scarlet fever, diphtheria, epidemic influenza, articular rheumatism, erysipelas, diabetes mellitus, auto-intoxications etc. Acute rhinitis may have its origin in the imbalance of the vasomotor nervous system due to the presence of toxins in the blood or to other dyscrasia. It is a question whether micro-organisms alone ever primarily give rise to simple acute rhinitis and it is still a debatable point whether other etiological factors can result in rhinitis without the influence of micro-organisms.

Whatever may be the etiology the symptoms show but little variation except in degree of virulence and duration of some of the stages. Diphtheric or membranous rhinitis characterized by the presence of a membrane affording the only marked departure from the above rule.

As is well known simple rhinitis usually follows some indiscretion in the matter of being properly clothed when the body is exposed to sudden chilling or it may be easily induced by poor or insufficient food. In other words some devitalizing influence is the pre-disposing cause. The preventive for this form of rhinitis lies in sufficient nutritious food taken at frequent intervals to maintain a normal resistance to the devitalizing effect of sudden or unexpected exposure. The matter of clothing plays an important role. The underclothing should be capable of absorbing the normal bodily moisture as well as possessing the quality of being a non-conductor of bodily heat. The outer garments

play an important part and should be suited to the atmospheric conditions. Cold baths either by sponging or plunge tend to raise the resistance to cold and should be advised in cases showing a weakness in this direction.

### SYMPTOMS.

For convenience, the symptoms of acute rhinitis are divided into three groups as follows:

First stage or onset; subjective symptoms are sense of dryness or burning in the nose with conjunctival irritation, feeling of malaise and chilly sensations. Objectively, nasal cavities appear abnormally dry, mucous membrane hyperemic but not fully turgescient. Temperature ranges from 100 to 103. Headache may be present with sense of fullness between the eyes. This stage is of but a few hours' duration.

Second stage: This stage is characterized by increasing turgescence of mucous membrane and serous discharge. If the ostei to the accessory sinuses are patent the headache and sense of fullness usually subside during this stage. However, should the accessory ostei be obstructed by a deflected septum or enlarged middle turbinate the pain and sense of fullness would be correspondingly increased on that side.

Third stage: This stage is characterized by a muco-purulent or purulent discharge with a decline of the temperature. Headache and sense of fullness usually disappear in this stage providing there is no sinus involvement. Should the sinuses be involved and the ostei be obstructed the headache and pressure symptoms are correspondingly pronounced. Dizziness and vertigo may accompany the sinusitis and in this event the accessory sinus complication may require more strenuous attention than the primary rhinitis.

*Prognosis.*—Duration of simple acute rhinitis is from a few days to three weeks depending upon the patient's natural resistance and treatment employed. Duration of those cases of rhinitis due to constitutional dyscrasia will naturally depend upon the amenability of such cases to constitutional treatment. For instance in diabetic rhinitis the variation of symptoms will depend upon the percentage of sugar in the urine.

### TREATMENT.

Treatment consists of: 1. The establishment of drainage and ventilation of the nasal accessory chambers. 2. The establishment of the tonic of the vasomotor nervous system. 3. The promotion of the elimination of the bacteria by the ventilation and drainage of the

\*Read before Section on Ophthalmology and Oto-Laryngology M.S.M.S. 49th Annual Meeting, Lansing Sept. 10, 1914.

nose and sinuses. Naturally one must first ascertain the predisposing and the etiologic factors. Obstructive lesions should be treated with cocaine, adrenalin etc. that the maximum ventilation and drainage may be obtained. Lack of ventilation and the presence of retained secretions expose the patient to sinus troubles and tend to perpetuate the inflammation. Removal of the obstruction is better left to a time when the parts have regained their normal tonicity. Promoting the tonicity of the vasomotor system is a very important factor in the treatment. This can best be accomplished by rest, preferably in bed and the administration of such remedies as will tend to relax the peripheral circulation. The writer has not outgrown the practice of a thorough diaphoresis in the early stage, providing there are no contra-indications. An alcohol rub should follow the diaphoresis and it has a general tonic effect in any stage of the disease.

The above will abort many cases of coryza and cannot be regarded as empirical, a criticism to which much of our nasal treatment is exposed. The diaphoresis means an accelerated circulation which in turn means increased resistance to the invading hosts of micro-organisms. This increased resistance is due to the maintenance of the normal opsonic index of the blood which, according to Wright, is essential before phagocytosis or the destruction of the bacteria can be accomplished.

Chronic rhinitis is a condition which we approach from an entirely different angle than we do simple acute rhinitis. While we recognize that some of the acute exacerbation of this disease may parallel acute rhinitis in its symptoms the history at once puts us on our guard. The history of repeated attacks of coryza, the patient's complaint of a continuous stiffness or cold in the head tells us that we are probably dealing with some intranasal deformity. Alternating right and left obstruction always suggests turgescence or hypertrophy of one or more of the turbinate bodies. Constant unilateral with occasional bilateral obstruction suggests septum deformity. Continued bilateral obstruction with exacerbations in damp weather suggests polypi while persistent unvarying nasal obstruction suggests adenoids. The writer's experience is that most cases of hypertrophy or hyperplasia of the turbinates come from repeated and neglected cases of coryza.

Chronic turgescence rhinitis is symptomatically the same as that form due to hypertrophy or hyperplasia. Objectively the turbinates present a swollen appearance easily indented by

the probe and subject to great shrinkage when cocaine or adrenalin is used. If the inflammation continues, a true hypertrophy of the tissues takes place on account of the increased nutrition from the large blood supply.

A true hyperplasia differs from hypertrophy in its causation and morbid anatomy. Prolonged mild irritation from the sinus secretions is supposed to be the cause of the hyperplasia while negative air pressure due to a deflected septum may cause the turgescence rhinitis with the subsequent hypertrophy. Structurally in hyperplasia we have an increase in the number of tissue cells, whereas in hypertrophy there is an increase in the size of the cells from over nutrition. Nasal stenosis may be due to a deviation of the septum anteriorly. With each descent of the diaphragm the air is rarefied behind the obstruction and with this negative air pressure there results a venous congestion or turgescence of the turbinate bodies. If in conjunction with the turgescence of the turbinates there is associated an obstruction in the region of the middle turbinate the retained secretions undergo decomposition producing a prolonged low grade inflammation or irritation resulting in hyperplasia of the turbinal bodies. Irritating secretions from the accessory sinuses are also capable of exciting hyperplasia of the turbinates.

Considering the etiology of chronic rhinitis the treatment is necessarily surgical and the election of the procedure will depend on the anatomical anomalies present. The object should be two-fold, removal of predisposing causes and relief of immediate symptoms.

The practice of actual cauterization has become obsolete because of the difficulty of controlling the destruction of tissue and the danger of complications that may develop later. Chemical cauterization is much safer but is objectionable because of the lack of permanency in its results. However, in cases where there is some valid objection to the use of the knife the chemical cautery serves a very good purpose.

Whatever operative measures are resorted to, patency of the nasal chambers with the elimination of the negative air pressure should be our objective. Spurs on the septum should be removed, the bevelled edge saw having proved most satisfactory in the hands of the writer. Submucous resection of the septum is now regarded as the only rational operation to correct deflections of the septum. That is not saying that all septum deflections must be corrected. Before the submucous operation became

so generally used the writer was getting good results by removing portions of the turbinate bodies and often in conjunction with this practice removing spurs and thickened portions of the septum. This practice is a much less formidable undertaking from either the standpoint of the operator or the patient and there is never any perforation to explain or apologize for. Resection is the operation of necessity in many cases, however, and especially in those cases characterized by pressure symptoms.

For turgescient rhinitis removal of some of the soft tissues with a sliver of bone from the lower edge of the inferior turbinate has proven satisfactory and permanent in its results. In hypertrophy of the lower turbinate the same operation is performed but a large piece of bone is removed that the normal patency of the nasal chambers may be restored. This same operation is employed to correct hyperplasia but in addition it may be necessary to remove a piece of the middle turbinate also. If there is accessory sinus involvement complicating the hyperplasia the surgical intervention must necessarily be extended to those parts before a cure can be expected.

#### SUMMARY.

While simple acute rhinitis is, in the large majority of cases, an innocent offender, its neglect by the patient often results in secondary infections of the accessory sinuses and the ear complications. It is such a common-place affection that patients usually ignore it until brought face to face with its possibilities. It is safe to say that if all cases of acute rhinitis were given proper treatment in the early stages there would result a marked decline in the demand for surgery of the accessory sinuses, middle ear and mastoid. There would also be much less of the chronic rhinitis which frequently has its origin in neglected cases of the acute form. In other words control the early rhinitis and the patient escapes most of the painful and persistent sequelae which are so common in neglected cases. Preventive medicine constitutes the highest degree of efficiency in our profession and as rhinologists we have a large responsibility in educating our patients and the general practitioners in the matter of safeguarding themselves against the ravages of this supposedly commonplace disease.

Regarding the management of these acute cases a word of caution with reference to the use of the so-called rhinitis tablets may not be out of place. First, I would advise against

their indiscriminate use in all cases. If used at all, they should be combined with some drug having a cathartic action for, as is so well known, drugs cannot be administered which will have a selective action upon the nasal mucosa only. The therapeutic effect of morphia for instance is the same upon the mucous of the bowel as in the nose or throat. Free elimination through the bowel is necessary in these cases and must not be inhibited by drugs of this nature for the transitory effect in the nose or throat.

As stated above if used they must be combined with drugs to insure free catharsis. Furthermore, the tablets of this nature should not be administered beyond the first few days of the cold. Keeping the nasal mucosa shrunken up by topical and antiseptic applications is the safest and most efficient means of controlling this disease.

#### DISCUSSION.

DR. B. N. COLVER, Battle Creek: I am especially interested in two or three points in relation to Dr. Goux's paper. It seems to me that this subject is one of great importance to every one.

First, the fact that the large majority of cases of simple rhinitis will recover with home treatment or no treatment has lead the average individual to regard these "common colds" as insignificant ailments. The possibility, however, of unusual and serious complications, as for example sinusitis, arising in any case, should lead the profession to teach the people the importance of thorough care of every cold and thus prevent the large number of immediate and remote consequences of neglected rhinitis.

Again the statement of the essayist as to the importance of early treatment and its efficacy as compared to treatment begun late, is well worth emphasizing. If a cold is to be checked successfully it must be in the first stage. His suggestion of early rest in bed to restore the vaso-motor tone is especially good. This is difficult and well nigh impossible to bring about in the cases of business men or busy housewives. I am convinced, however, that a twenty-four hour rest in bed, with suitable treatment, if begun within the first twelve hours of the onset of the sneezing and serious discharge would result in a large proportion of abortive shortening of these infections.

In conclusion, I wish to mention the dangers from the ordinary pocket handkerchief. One often notices the careless handling of the handkerchief when a patient with a muco-purulent discharge clears his nasal passages just as he is seating himself in the office chair. He first unfolds and possibly shakes this soiled handkerchief, thus scattering the partially dried secretion in all directions. It seems to me that the lesson taught us by the immediate handling of tuberculous secretions should be adapted to the prophylactic handling of this highly infectious discharge.

DR. BIRD, Flint: I think that one point which

Dr. Goux made about the use of rhinitis tablets indiscriminately is very good. These cases usually go to the family physician who gives them some form of rhinitis tablets, perhaps accompanied by a prescription for them. These patients, the next time they have coryza are very apt to have this prescription refilled, may fail to follow it up with the catharsis, and a great deal of damage can be done. The ideal treatment of course in these cases would be to put them to bed and treat them as sick patients. This, we cannot always do, especially with a business man.

If he has chronic hypertrophy of turbinates or deflected septum he should be treated surgically. It is very rarely that we are called upon to do a radical operation on these cases if they are treated intelligently from the start.

I have enjoyed the paper very much and think it a very interesting subject.

DR. ABBOTT, Albion: To me the biggest word in surgery is asepsis, the next in drainage. If we can get perfect drainage, nature will do her work. In our treatment we must establish drainage. If we keep in mind the effect of drainage I think we have the key to the situation as to etiology and treatment.

DR. ROLLER, Grand Rapids: I want to say just a word in regard to the use of rhinitis tablets. I think physicians are to blame for the use of these tablets, for we have patients come to us and instead of taking the time to write them out a prescription we simply tell them to go and get a certain drug, assuming that they know how and for what purpose to use it.

I was very much impressed with the way the Doctor handled these cases. My method in acute cases nearly always is the use of cocain and adrenalin and then an application of chromic acid. I think that after these cases have gone on with repeated attacks the only thing to do is something in the line of surgical work. These are the cases which interest us.

DR. GOUX, closing: I wish to thank you for the discussion. I think the last speaker struck the key note of the situation. I think most cases of rhinitis have some sinusitis and by establishing drainage you prevent further complications.

#### PHYSIOLOGICAL PHYSICS IN RELATION TO THE EYE AND EAR.\*

AUSTIN F. BURDICK, M.D.

LANSING, MICH.

Physiological chemistry has a familiar sound but physiological physics seems rather strange. Yet why not? Has not the medical profession been seeking answers to her numerous problems unceasingly, and untiringly in the fields of chemistry and bacteriology, all of which efforts have brought forth fruit of such magnitude that its good can never be known or measured? Nevertheless the field of physics should be investigated just as assiduously, lest perchance

some equally useful knowledge hidden there should be overlooked.

It is therefore my purpose to bring to your attention, a few facts along this line in the hope of stimulating further investigation, and, if possible, to point the way toward the solution of a few of the perplexing problems that still confront us.

High blood pressure seems to be a popular subject in these days, especially among the insurance companies, and is quite generally recognised as accompanying many grave conditions and serious diseases. Many theories have been advanced as to its cause, from the eating of meat, to old age, and sclerosed arteries. These reasons seem too inadequate to answer all the conditions involved, so I am going to apply a law or two of physics and see if it does not get us a little nearer to the truth. One might say that such a subject would have no place in the discussions of a body of specialists, but I hope to show that we are more concerned with it than is the general practitioner.

It is therefore with high blood pressure, its causes, and its effects, with special reference to the head, that this paper will largely deal.

It becomes necessary now to lay down a few fundamental facts as a foundation upon which to build the superstructure to follow. In this foundation we find the laws of physics to suit our purpose best. These laws operate in the human body as relentlessly as they do in the world about us. In other words nature's laws are the same everywhere or they would not be laws. In the years past we have been digging deep into the mysteries of the laws of chemistry and bacteriology and applying them to the phenomena encountered in the human organism, with wonderful results, but for some unaccountable reason the laws of physics, which are equally powerful and which must be reckoned with, whether we recognize them or not, have been almost entirely overlooked, or worse yet, utterly ignored.

The laws of physics with which we have to deal are the laws of fluids. Blood is a fluid and as such is subject to the laws governing fluids. These laws are briefly, that fluids under confinement exert pressure equally in all directions and that fluids are practically non-compressible, that is, they cannot, except very slightly, be made to occupy a smaller space. This is the principal back of the powerful hydraulic apparatus.

Fluid confined is hard, and presses with as much force as though it were wood or iron.

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If you don't believe it, let some one strike you over the head with a bag full of water and see if it doesn't hurt as much as though they struck you with a club.

Blood in its flow through the skull and brain has many more opportunities to be confined, or its free flow interfered with, than in any other part of the body. The skull is a firm non-yielding receptacle containing the most highly organized and important part of the central nervous system.

In the infant and young adult the sutures are not firmly united, giving some small opportunity for expansion in case of need. This acts somewhat in the nature of a safety valve for the high spirits of the youth but is denied the old man whose cranial sutures have become firmly ankylosed.

We have the blood entering the cranium principally by three routes—the carotid, the vertebral and the middle meningeal, the first and last entering through small bony foramina, the carotid opening being, in addition, very tortuous. The vertebral also has a rather devious course, winding around the cervical vertebra before entering the foramen magnum in front of the pons, joining with its fellow of the opposite side to form the basilar artery. The bulk of the blood in the cranium finds its exit through the bulb of the internal jugular while the rest passes out through the basilar veins and a few emissary veins.

Inside the skull we have the usual close association of the arteries, veins and nerves. But in addition it is necessary to note that the arteries are confined many times in bony walls, or compelled to pass through narrow, constricted bony openings. We must note also that there are numerous plexuses of both arteries and veins, but above all that there are large venous channels, the sinuses, with more or less flaccid, non-muscular walls, containing no valves.

These points of entrance and exit of the blood stream in the external skull wall, as well as the foramina inside the skull, act as dams or points of constriction under certain conditions, which interfere with the free flow of blood. When this takes place the blood vessels behind these points of constriction, enlarge and assume a dilated or aneurysmal shape, which press upon neighboring structures with more or less disastrous results. The blood in these dilated blood vessels is confined and therefore hard and consequently presses upon soft nervous tissues with as much force as would a splinter of bone.

To be a bit more explicit it may be well to run over the main points concerning the blood supply of the brain, showing in as few words as possible the relation of these blood vessels to the brain and nerve structures.

The carotid enters through a tortuous canal in the petrous portion of the temporal bone, to form, immediately upon entrance, the circle of Willis at the base of the brain, surrounding the pituitary body. It gives off the ophthalmic, the anterior cerebral, which joins its fellow forward, by the short anterior communicating; the middle cerebral and the posterior cerebral joins with its fellow by the posterior communicating. Posteriorly the circle of Willis receives the basilar artery, which before becoming part of the circle gives off the superior cerebellar artery, and the anterior inferior cerebellar artery, besides a number of smaller transverse arteries.

The basilar receives its supply from the large vertebral artery and the small anterior and posterior spinal arteries. This briefly then is the arterial blood supply of the brain. Now a few words as to their relation to the brain and nerves.

The ophthalmic artery passes forward and enters the orbit through the optical foramen lying between the optic and the oculomotor nerves.

The anterior cerebral runs forward between the optic and olfactory nerves to reach the longitudinal fissure.

The middle cerebral, the largest branch of the internal carotid runs outwardly deeply within the fissure of Sylvius and supplies the motor area of the brain. It gives off branches to the caudate and lenticular nuclei, the internal capsule, the optic thalamus and the surface of the brain. The branch to the caudate and lenticular nucleus is called by Charcot the artery of cerebral hemorrhage.

The posterior communicating runs backward parallel to and on the inner side of the oculomotor nerve to join the posterior cerebral artery. The posterior cerebral arteries, the two terminal branches of the basilar, wind around the crura cerebri, and, running parallel with the superior cerebellar from which they are separated by the oculomotor nerves, reach the inner surface of the posterior part of the cerebrum.

Like the anterior and middle cerebral the posterior cerebral gives off cortical and central branches.

It is interesting to note that the cortical and central branches of the arteries of the brain do

not anastomose with each other and therefore form two independent systems.

The cortical branches, however, anastomose somewhat with their fellows of the opposite side but seldom sufficiently to nourish a portion of the brain from which the blood current, through the main artery supplying it, has been cut off. In other words the cortical arteries differ from the vessels of the upper and lower extremity in not being able to establish a collateral circulation which will perform the office of the principal vessel in the event of its being seriously disabled. In this respect they resemble the vessels of the lungs, kidneys and retina.

The central branches do not anastomose at all, therefore obstruction of one of the chief vessels of the brain, or any interference with a free flow of blood through it, will result in softening and degeneration of the regions supplied by its central branches, while not so materially affecting the regions supplied by the cortical branches.

Running on each side of and almost parallel with the basilar artery are the sixth or abducent nerves.

The internal auditory arteries, one on each side, spring from the basilar artery, and may arise from the transverse arteries. Each accompanies the corresponding auditory nerve into the internal auditory meatus where it runs between the facial and auditory nerves, and, reaching the bottom of the meatus passes into the internal ear. This artery you will note runs a fairly long course through a bony canal between two very important nerves. It is this relationship plus the laws of fluids that explains the cause of many cases of nerve deafness, throbbing in the ears, tinnitus, etc., as far as the auditory nerve is concerned, and many cases of facial paralysis, as far as the seventh nerve is concerned. The two veins which drain the internal ear follow the same course as the artery and one empties into the internal jugular, while the other empties into the superior petrosal sinus.

The middle meningeal enters the skull through the foramen spinosum and spreads out anteriorly and posteriorly in the dura, over the motor area of the brain.

As for the veins we have large cavernous plexuses and large loose sinuses which nearly all eventually drain into the jugular bulb and then into the internal jugular.

In the orbit there is a perfect net work or mass of blood vessels comprised of the numerous branches of the ophthalmic artery and vein.

The list consists chiefly of the lacrymal, anterior and posterior ethmoid, supraorbital, retinal, ciliary, muscular, palpebral, nasal and frontal. In passing, I will say that in my opinion it is the dilatation of this mass of blood vessels which causes the exophthalmous or exophthalmic goitre.

We have now a rather comprehensive general view of the more important blood vessels in the cranium and their relationship to the brain and cranial nerves.

It is obvious that, if you grant my premise that it is possible for certain conditions to exist which would cause any of these blood vessels to become engorged or dilated, the manifestations resulting would depend entirely upon the set of blood vessels involved and the nerve or brain center affected.

This simple statement opens up a field so vast that, as the minister says, there is a sermon in every syllable of it. Time and place forbid a full and free discussion, but let us examine briefly a few points in this connection.

Pain is always due to pressure upon a nerve, whether the pressure be due to engorged blood vessels, tumors, bony walls, or exudates from inflammatory processes. The rule is always to relieve tension when possible. Here we have then a clue to the various headaches, neuralgias, some misnamed forms of rheumatism, neuritis, etc. Considering only an ordinary headache at this time; what is it when you get that pain in the forehead over one or both eyes? Nothing more or less than dilatation of the supraorbital artery pressing the supraorbital nerve against the edge of the supraorbital foramina. Why can people, lay people, rub a headache away? Because they strip the blood along exactly on the same principal that milk is stripped from the teat of a cow. When sufficient stripping has taken place the headache is gone, for the time being, at least, perhaps to return again if the cause of the engorgement still continues or if the engorgement has not been fully relieved. For the same reason hot and cold compresses relieve certain headaches, because they relieve the vaso engorgement. Headaches form a whole subject in themselves, but this much in passing.

If pressure involves motor areas we of course will get motor disturbances; if sensory, sensory disturbances. If motor areas or nerves are involved, we will get spasms or contractions or paralysis or paresis of the muscles supplied by these centers. If the sympathetic system be involved, there will be vaso-motor disturbances. If sensory areas or nerves are involved, we will

get areas of anesthesia or hyperesthesia, areas of heat and cold, sensations of pain from a dull ache to sharp, shooting or lancinating pains.

May not many of the symptoms so glibly attributed to enlargement of the pituitary body really be due to engorgement of the blood vessels of the cavernous sinus and circle of Willis surrounding it? Many, many other questions arise for discussion but time prohibits their introduction now.

I must hasten on. What are some of the conditions which would cause blood to flow into the skull faster than it flows out? When this occurs, pressure, blood pressure, rises until the outgo equals the intake. This must necessarily be so. As long as the outgo does not equal the intake, the pressure continues to rise and disturbances resulting therefrom are cumulating one after the other until conditions can become possible, so serious as to be almost unbelievable.

The blood is a life giving stream and a sewer. It brings food and nourishment while it also carries away poisons and the waste products of metabolism. Intense activity demands blood to supply food and repair, and to get the ashes resulting from that activity, out of the way. So wherever there is intense activity, there, normally, is a call for blood to flow rapidly and freely.

Eye strain is one of the commonest forms of intense activity. Normal use entails tremendous activity, appreciated by few, but modern times and customs have augmented that activity many fold. A few things on the list are reading, sewing, studying, shopping, theaters, auto riding, traveling on swiftly moving trains, the movies etc., etc.

A second form of activity which produces cerebral engorgement is intense mental effort. This may manifest itself in the form of legitimate, but none the less active, planning, scheming, visualizing etc., or in the form of worry and excitement, fear or anger.

A third cause is acute and chronic conditions of the mucous membranes of the nose and respiratory passages generally, including all the septic and nonseptic hyperplasias and accessory sinus involvements. There being a close association on account of the ethmoid, nasal and other communicating blood vessels involved.

It is interesting to note that in many of the diseases, which are accounted for by the general unsatisfactory blanket term nervousness, the etiology is closely associated with one or more of the factors above named. Particularly is this

true in old people whose vitality is growing weak, eyestrain greater, and arteries old.

When the blood pressure is raised for any considerable time there are not only disturbances due to pressure upon nerves and nerve centers but there is frequently back pressure upon the heart, causing fluttering and functional disturbances usually attributed to nervousness. This continued long enough, can, and does, result in actual organic trouble from valvular lesions to dilatation of the heart.

It is manifestly impossible in the time allotted to me to more than skim the surface so I will close now by a brief recapitulation of the items gone over so that they may stand out more clearly.

The blood is a fluid subject to the laws of fluids.

There is a perfect net work of blood vessels in the skull, which forms a firm non-yielding enclosure.

**This blood supply enters through narrow and limited openings and emerges through similar channels.**

Various activities cause blood to flow into the skull faster than it flows out. Pressure results.

Disturbances and manifestations resulting vary according to blood vessels and nerve centers involved.

Great variety of such disturbances.

Of special interest to us is the internal auditory arteries and veins passing through a bony canal the seventh and eighth nerves, providing a cause for many cases of nerve deafness, throbbing and roaring in ears, and other forms of tinnitus, resulting from involvement of the eighth nerve and many cases of facial paralysis resulting from involvement on the seventh nerve.

Pain and paralysis in various parts of the body, particularly neuralgia, neuritis and certain forms of pain wrongly called rheumatism, pain in the back of the neck and between the shoulders which is so frequently called neuritis or rheumatism is nearly always due to the causes enumerated.

Clinically I have demonstrated over and over again the truth of the statements embodied in this paper, from facial paralysis and hemiplegia to total nerve deafness; more or less complete recovery having been obtained by the application of these principles.

## CONSERVATION OF VISION.\*

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GRAND RAPIDS, MICH.

In presenting a paper on this subject, it is with an earnest desire to enlist a broader cooperation from the profession in the noble work of preventing partial and total blindness.

In order to finish in the allotted time it will be necessary to direct my efforts to only some phases of this broad subject. Volumes might be written on its subdivisions, but I will try to emphasize only those phases which seem pertinent to this occasion.

In the United States, according to the most reliable statistics, about one-tenth of the blindness is due to ophthalmia neonatorum. It is claimed there are over 118,000 blind people in the United States. Of these 10 per cent. are blind from infancy due to one preventable disease.

In considering the subject of conservation of vision, we must not confine our efforts to the 12,000 cases due to one cause or neglect, but to the probability that a much larger per cent. of the 118,000 are blind from causes which can eventually be listed as preventable.

Conservation of vision considers total or partial impairment due to infections, constitutional diseases, injuries, occupational diseases or hazards, furnishing of glasses by the incompetent, physiological arrangement of school rooms, workshops, offices, stores, etc., prophylactic measures at birth and improper knowledge concerning the care of the eyes.

In some sections, trachoma is an all important disease, while in other regions, thanks to the efficiency of the Marine Hospital Service at various ports of entry the disease scarcely exists.

Among some people glaucoma is much more common than elsewhere and the newer operations of sclerotomy will be helpful.

Syphilis, the cause of 25 per cent of impaired vision, is more effectively treated than ever before. It may attack any of the structures of the eye and produce keratitis, iritis, cyclitis, choroiditis, retinitis, and optic atrophy.

Today it is a preventable cause of blindness. When the applicants for a marriage license can show a negative Wassermann test, properly made and properly controlled, the danger of congenital lues of the eyes of children born of

that union, will be practically nil. Education will eventually solve the question of syphilis. The poor immigrant with trachoma is turned back at our portal; the leper is hunted like a wild animal; the tubercular patient is looked upon askance, but the syphilitic young man walks our streets, eats at our table, drinks from our glasses, swims in our public baths, smokes our pipes and marries our daughters. The world is his playground; the innocent are his victims and the next generation educates his blind and deaf and dumb children.

Too frequently a patient with wood alcohol atrophy comes with a record of years of consecutive labor in the finishing room. Machinists, blacksmiths, foundrymen get particles of iron and emery in their eyes which often could be avoided by the use of goggles. These causes in particular are in nearly every case further aggravated by some fellow workman attempting to remove the foreign body with a jackknife or other dirty instruments thereby enhancing the danger of sight. Every eye specialist finds many occupational causes for danger to vision varying with the industries of his locality.

The problem of lighting in its relation to the efficiency of the eye is receiving the attention of the lighting engineers. For the kind of distribution effects given by the majority of the lighting systems now in use, too much light for the welfare of the eye is being employed. Under the systems for direct lighting the eye loses greatly in efficiency as the result of three or four hours' work. In this time it loses practically nothing under daylight and little more under good systems of indirect lighting. Churches, theatres, stores and public buildings are improving in this important factor in conserving eyesight, while the alarming increase in moving picture shows is a menace not to be considered lightly.

Too much responsibility is given others than the medical profession in fitting glasses. The oculist often is called upon to care for a patient suffering from glaucoma after the patient has exhausted the skill of several glass fitters. The same is true in so-called cases of myopia which under proper treatment are often proven to have normal or even far-sighted eyes. Myopia is a cause of 5 per cent. of blindness.

In the year following the enactment of Michigan's new law for the care of the eyes of the new born, there has been an alarming neglect in observing its requirements. In Grand Rapids, a city of 120,000, very few cases of ophthalmia neonatorum have been reported and in

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every case reported, the law has been violated. In some events the birth had not been reported. In all cases the prophylaxis prescribed by the State Board of Health had not been used at birth and the attending physicians had failed to report ophthalmia neonatorum to the health officer. These cases came under the observation of the specialists before reports were made.

A strong effort should be made to make people understand the law and comply with it.

The doctor either obeys the law or disobeys the law. It is not his office to discuss other methods of prophylaxis. If he does not use the remedy ordered by the State Board of Health, he should be punished.

In this connection the question of the midwife comes forcibly to our attention. The midwife has no legal status in our state. She is not registered, usually uneducated, and incompetent. Charles Edward Zeiglar of the University of Pittsburg, fears that the great danger lies in the possibility of attempting to educate the midwife and in licensing her to practice midwifery, giving her a legal status which later cannot, perhaps, be altered. If she once becomes a fixed element in our social and economic system, as she now is in the British Isles and on the continent, we may never be able to get rid of her. She is a menace to the health of the community, an unnecessarily evil and a nuisance. He states, "I am unalterably and uncompromisingly opposed to any plan which seeks to give her a permanent place in the practice of medicine."

It is true that 80 per cent. of the European children are born under the wholesome supervision of the women. But these women have had a thorough and practical training in the state institutions and practice under carefully framed and rigidly enforced state regulations, any fracture of which results in either fine, imprisonment or revocation of license.

The three channels through which the conserving eyesight problem may be solved are education, legislation, and publicity.

The public is already educated in care of the eyes of school children in the larger cities. Teachers are anxious to favor children with defective sight in helping them to have all advantages possible. Tests of school children are made and those of defective vision are referred to the oculist. In this the boards of education are spreading knowledge which tends to conserve vision.

Public welfare work is doing much in educating and gathering statistics concerning blind-

ness. Societies for prevention of blindness have been organized in eleven states, these working in co-operation with social settlement workers, organized charities, social workers of dispensaries and hospitals, and such organizations can render great assistance.

The Michigan Association of Workers for the Blind, encourages the organization of local associations. The first local association, the Grand Rapids Workers for the Blind, was organized in October, 1913.

As to legislations, some laws directly and indirectly have to do with conservation of vision.

Michigan's Compensation Law has resulted in better care to the injured. It has attracted attention to their hazards. In considerable measure through its workings it conserves vision.

The present laws of Michigan allow the non-medical refractionists to fit glasses for near sightedness (or myopia) and for patients where glasses fail to produce normal vision. A change in the law which would make it a misdemeanor for any but a physician to handle—such cases would bring these patients under medical care earlier. It would be a great advancement.

The Michigan legislation in 1913 passed a law governing cases of ophthalmia neonatorum. It reads:

"Section 1. It shall be the duty of the State Board of Health to officially name and approve a prophylaxis, to be used in treating the eyes of newly born infants, and it shall be the duty of the Board to publish instructions for using the same.

"Section 2. It shall be the duty of any physician, nurse or midwife who shall assist and be in charge at the birth of any infant or have care of the same after birth, to treat the eyes of the infant with a prophylaxis approved by the State Board of Health; and such treatment shall be given as soon as practicable after the birth of the infant and always within one hour; and if any redness, swelling, inflammation or gathering of pus shall appear in the eyes of such infant or upon the lids or about the eyes, within two weeks after birth, then any nurse, midwife or other person having care of the infant, shall report the same to some competent practicing physician within six hours of its discovery.

"Section 3. Any failure to comply with the provisions of Section 2 of this act shall be punished by a fine not to exceed one hundred dollars or imprisonment in the county jail not to exceed six months, or both such fine and imprisonment in the discretion of the court."

By another enactment the birth certificate

must bear the statement that the infant's eyes were treated as required by the statute first cited.

Complying with Section 1, Act. No. 123, the State Board of Health officially names and approves as a prophylaxis to be used in treating the eyes of newly born infants, 2 per cent. silver nitrate solution. The eyes are to be first washed with physiological salt solution or with boric acid solution, after which one drop of 2 per cent. silver nitrate solution is to be instilled in each eye.

This act took effect August 14, 1913.

Publicity is the best method in getting legislation or enforcement of laws.

At the meeting of the Michigan Association of Workers for the Blind, held in Saginaw last month, definite action was taken in several instances which are encouraging. Protest was made against the use of old forms of post cards by local health officers which do not include ophthalmia neonatorum in the lists of reportable diseases; also against the use of old birth certificate forms which do not provide for the physician's statement that the infant's eyes were tested as required by the statute.

Efforts will be made to fix by legislation degrees of blindness and compensation accordingly. It is recognized that partial blindness in many cases equals total blindness as far as employment is concerned.

One result of our present compensation law is the increased hazard assumed by the employer if the employee has impaired vision. This often makes employment as impossible as if blindness were complete. An employee with impaired vision in one eye never receives an injury in any but the good eye. These men should only work where there is no hazard to sight.

It is conceded by experienced social workers that publicity can best be gained by insisting upon enforcement of law. Nothing will attract attention to the neglected ophthalmia neonatorum cases like prosecution of the offender, whether it be midwife or physician.

How terrible the thought that among the blind people to to-day (individuals that you or I may know) so many are suffering from the ignorance of some doctor who was confident there could be no gonorrheal infection at childbirth, forgetting that ophthalmia neonatorum is not alone due to gonococci. Only 60 per cent. is due to this cause. There is nothing more pitiful than blindness in any form. While we should lend our assistance in reducing any and all causes of blindness, every physician must

comply with the law governing the care of the eyes of the new born. He should not be afraid that he may give offense to a friend or patient. He can reassure them that ophthalmia neonatorum is not always due to the same infection.

The broadest co-operation on the part of physicians and laity, boards of health, social welfare workers, etc., is necessary to prevent the causes of blindness.

#### DISCUSSION.

DR. HUIZINGA, Grand Rapids: Answering the question why not more is done in the way of regular systematical medical examinations of school children, permit me to speak for Kent county and Grand Rapids.

In Grand Rapids we have a Christian Science Church which is opposed to these systematic examinations of school children, and owing to their political power they have been able to place one of their leading members on the school board. This member has consistently opposed such examinations and used her political influence to thwart the work. School nurses must be commended for doing splendid work and are constantly calling the attention of the parents to the fact that there is trouble or defect in the eyes, ears, noses or throats as well as teeth of their children.

The opposition comes from the people, of course, who think all of these things are fads and as a result of these faddish opinions, as they are called, nothing is done. In Kent county, I have gone into a couple of the parochial schools and made systematic examinations of all the children there and sent written reports of these examinations to the principals. These, in turn notified the parents saying that their child was afflicted with such and such a trouble and asking them to please see some specialist as soon as possible. These were not signed by the physician but by the teacher. The result was simply this; that in one school not one sixth of the children examined and found having serious affections were ever brought to specialists or given any treatment.

The work of which Dr. Patterson has spoken is going to result in great good. It is to be hoped that all the members will take an active part in it. Publicity after all is important and will finally settle this question. When the people properly understand that the future interests of their children are largely determined by the physical condition of important sense organs during their training period, they will demand such attention as they now refuse through ignorance.

A third factor in this problem is the lack of interest on the part of a very considerable number of physicians, especially among the older men in our profession. Many of these still fail to recognize the importance of pharyngeal obstruction and infections, of impaired sight and hearing and that many neuroses are the result of unnatural and pathological conditions in these organs.

The specialists have urged these matters upon the attention of the profession so persistently that the subject has become trite and yet, a very considerable proportion of our medical men pay more attention

to the immoral funny cartoons of the Sunday newspaper than they do to these important questions.

When the profession becomes thoroughly awake, the laity will respond as they always do when properly informed and the school authorities will be only too glad to assist and co-operate in every way in their power.

DR. RICKER, Cadillac: Mr. Chairman, Gentlemen: It gives me a great deal of pleasure to know who Dr. Paterson is as I have never met the Doctor before and for that reason had no opportunity of learning the gist of his paper. I feel that it should be read before the medical section as they are the men who should have full meaning of such a paper, I say medical section because so many workmen come to eye specialists with some foreign particle in their eye which has probably been lodged there for as long as ten days unrecognized by the medical doctor and there is sometimes little possibility of saving the vision. The education of the people along this particular line is certainly bringing about the best results that can be accomplished in this work. The campaign is to educate the people along the line of conservation of vision.

I hope the legislature will pass a law making the systematic examination of school children compulsory at certain intervals.

The midwife, as the Doctor has said, has no occasion for using 2 per cent. solution of nitrate, because she has no right to. I do not think it good policy to educate her to do something which is contrary to the laws of our state.

We should examine all of the men who are employed in our factories, as a result of the liability law of the state of Michigan. I hold that every employe should be examined to know whether he has perfect vision when he goes to work. I hope that the doctors of the state of Michigan will co-operate with Dr. Parker and see that this work is taken up in every county of the state, that the people are educated and that the children are looked after, the vision protected; and in this way we will save the eyes of the children who will be the next generation and thus along this particular line, lessen the expense of caring for them in the schools for the blind.

DR. CHAPMAN, Muskegon: Just a word concerning the school work. I do not understand why there is difficulty in getting this systematic examination in the schools, for this reason: In Muskegon schools we have had systematic examinations for four years; of eye, ear, nose and throat, from the first grade up and considerable of it has been done in the first grade and in the kindergarten. We have an organization known as the Medical Advisory Board of the Public Schools, consisting of three physicians. Two general practitioners—one male and one female, and one specialist who does eye, ear, nose and throat work alone. These are appointed by the school board and work on a small salary. A school nurse has assisted in doing this work for four years and we have no trouble of any kind. The results are excellent.

Where is the trouble in other cities? with the school board, physicians or with the people?

DR. C. H. BAKER: In my own locality effort has been made to have school examinations carried out systematically and periodically. It fails

continually and for the reason that every man felt that he was not getting paid for his work. A very large army is opposed to these examinations lead by a great general. This army is the general public and the leader, General Indifference. The only way I can see by which these examinations can be made general is to educate the general public along this line and have the state or city pay for it.

## BACTERIOLOGY AND BACTERIA THERAPY OF THE UPPER AIR PASSAGES.\*

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It is impossible in a short paper, designed to be part of a symposium, to cover this subject thoroughly. The attempt has been made to bring to the attention of the section salient, fundamental facts of bacteriology and immunity which underlie and influence bacterin therapy.

The morphology, life habits, and pathogenicity of many of the bacteria found in the upper air passages, are indefinitely known. Friedländer's pneumo bacillus, from which the bacillus muco catarrhalis is not clearly distinguished, is thought to be identical with the ozena bacillus of Lowenberg and Abel, and the etiological value in diseases of the air tract of one or both, is not determined. The micrococcus catarrhalis is generally considered by clinicians to be a causative agent in respiratory infections. This relationship has not been proven by laboratory workers, who consider this germ of doubtful etiologic importance. The organism is a common inhabitant of the respiratory tract. Its isolation is most difficult because of the complex mixture of organisms with which it always occurs. The bacillus fusiformis, associated with Vincent's angina, has not been proven the cause of that disease. There has been no artificial production of the Vincent's angina with fusiformis bacillus.

The influenza bacillus is most difficult to isolate. Reliable laboratory results seem to indicate that most influenzas are caused by the streptococci and may be treated with vaccines of the same. The etiologic importance of the influenza bacillus is not determined. The vaccine of pure bacillus influenza has not been, up to date, therapeutically successful.

The streptococcus, staphylococcus, pneumococcus may be very commonly cultivated from the mucous membrane of the upper air passages.

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It has been thought probable that only a limited number of strains of the pyogenic organisms are etiologically concerned in acute infections of the mucous membrane.

There is a group of organisms, the diptheroid group, upon which some workers have laid much emphasis, particularly upon one member of the group, the bacillus segmentosus of Cautley, in the causation of acute rhinitis. This organism has no standing or identity with American bacteriologists so far as the author can ascertain. The diplococcus rheumaticus closely allied in its morphological characteristics to the streptococci, cultivated from the tonsil, has some standing as a specific cause for rheumatism. The coccus erysipelatos is a member of the streptococci family and not a separate entity. The tubercle bacillus, spirochetæ pallida, and Klebs Loeffler are not infrequently concerned, while the parasites of actinomycoses and the Frisch bacillus causing rhinoscleroma, are rarely met.

The bacteriology of acute or chronic rhinitis, acute or chronic sinus infections, and tonsillitis, is not definitely established. The specific organisms of some of the infectious diseases, particularly the spirochetæ pallida and Klebs Loeffler, induce a pathological process in the air passages and afford a positive bacteriological cause for the ensuing disease.

In the application of bacterin therapy, autogenous stock and serobacterins are used. Serobacterins are preparations in which the bacteria are saturated with the corresponding specific antibodies. This saturation occurs by allowing the mixture of bacteria and immune serum to stand for twenty-four hours, during which time, it is claimed, the bacteria absorb the corresponding specific antibodies which the immune serum contains. Such preparations are standardized and sterilized. There is sufficient scientific foundation underlying serobacterins to interest the clinician in their use and the determination of their value. Up to date the chief source of our information concerning the serobacterins is the literature of the producers. The writer has not noticed any reports of sensitized autogenous bacterins. The danger of anaphylaxis should be borne in mind in the use of serobacterins.

The introduction of bacterin therapy marked a wonderful advance in the treatment of infections. To determine the germ cause of the disease and to administer to the patient the corresponding anti-bacterial substance, is a remarkable advance in accuracy of therapeutics.

It is the treating of the infection by directly combating the cause in contrast to the indirect supportive measures upon which the clinicians have heretofore chiefly relied.

It would appear from personal observation and from available literature, that clinicians have not been giving the interest and time to the scientific application of bacterin therapy that this method of treatment deserves. The reasons for this are probably various. The bacteriological cause of many diseases are undetermined. The processes of immunity are not definitely established. Much of the work in immunity and bacteriology in which bacterin therapy originated is new and difficult to understand. The expense of vaccines and bacteriological examinations are often prohibitive. Frequently it is impossible to get accurate laboratory technic. Moreover, we have been deluged with a supply of ready to use, inexpensive vaccines accompanied by full directions for their use and most encouraging reports of their successful application in almost every known pathological process.

In considering the etiologic role of any family of organisms, it is to be remembered that each family of bacteria has various members which exhibit variations in pathogenicity. Certain bacteria exist in many strains while other organisms are known to possess only single or few strains. This fundamental fact is of much importance in connection with the use of stock bacterins. Because most bacteria possess numerous strains, it is doubtful if many of the stock vaccine, can be expected to have any therapeutic value. That a potent stock vaccine, prepared with the most careful technic, of a certain strain of streptococci, will stimulate in the body into which it is injected, the antibodies specific to that strain, is incontrovertible. If the strain of streptococci causing the disease be different than the one used in the preparation of the bacterin, the vital forces of the patient have been needlessly taxed to elaborate antibodies which have no corresponding bacteria to attack. In the preparation of polyvalent stock vaccines, various strains of a bacterium are used. Such preparations represent an attempt to furnish the profession, in convenient, inexpensive form, the bacterin suspension which will directly combat the germ cause of the disease. There are many reasons why it is doubtful whether a stock vaccine can be expected to successfully furnish the potent, specific strains concerned in a given pathological process. The same bacterial strains vary in their virulence in

different environments and under different conditions. Stock vaccines, if at all desirable, must be prepared from strains of bacteria recently isolated from pathologic conditions in man, and not from those weakened by artificial cultivation for many generations or altered by animal passage.

Artificial typhoid immunization offers a brilliant demonstration of the power of a bacterin prepared from artificially cultivated bacteria to confer immunity. The fact which makes this possible is that the virulence of the typhoid germ for man is largely confined to one strain of the typhoid group. Baltimore, in 1912, experienced an epidemic of a serious tonsillitis complicated with adenitis, peritonitis, and septicemia. The bacteriologic examinations established that a pneumococcus was responsible for the epidemic. We have illustrated in that epidemic the fact that bacteria may assume new pathologic roles and the necessity for a bacteriologic examination if vaccines are to be given rationally.

Diplococcus of Neisser tend to exist in a single strain. Their collection in gonorrheal rheumatism is difficult.

In cases of staphylococcus infection, the use of a stock vaccine of aureus has been found successful, probably because the antibodies formed by the various strains of this organism are very closely related or identical. The pathogenicity of citreus, albus, cereus albus, and cereus flavus is doubtful. Citreus and albus are regarded as degenerated forms of the pigment producing strains. It is reasonable, therefore, to use fresh, properly prepared stock vaccine of the diplococcus of Neisser and staphylococcus aureus. The influenza, Neisser cocci, and tubercle bacilli are so slow in growing that autogenous bacterins are impracticable for immediate use, and frequently, from the location of the infection, impossible to obtain. For the treatment of infections with streptococci, only an autogenous bacterin is indicated, for the organism exhibits very many strains and variations. Tuberculin has gradually won its way as an aid in the therapeutics of certain classes of tuberculosis, notably, localized tubercular processes in joints and glands and in the more localized chronic cases of pulmonary tuberculosis.

Diplococcus rheumaticus, which has some standing as the specific cause of rheumatism, is a frequent inhabitant of the tonsillar crypts and is of much interest to the laryngologist. The work on this coccus done by Rosenow and pub-

lished by him in the *Journal of Infectious Diseases*, in 1912 and 1913, is important.

It is obvious that the keystone of bacterin therapy is that the germ or germs causing the disease in question shall be known. The use of bacterin therapy in cases in which the etiologic bacteria are unknown or guessed at, is open to criticism. Bacterin therapy is unscientific for the treatment of acute infections. After treatment with bacterins, immunity can be demonstrated in from ten to twelve days. The animal body requires that time to form anti bodies with which to fight the antigen introduced in the form of bacterin. From this it follows that a bacterin cannot be curative in a disease like acute coryza, even if the etiologic bacteria were determined, which, running an acute course, gives no time to build up a defending force of antibodies. The injection of specific serobacterins containing antibodies might prove efficient in acute cases. In this connection there is danger of anaphylaxis.

It is an essential point in bacterin therapy to keep a fresh supply of blood and lymph at point of infection. This has further hindered its application in many ear, nose and throat cases. In chronic sinus and suppurative ear cases there is a wall of granulation tissue and necrosed bone lining the infected cavities. The results of the bacterin injection must be unfavorably modified in proportion to the amount of necrosed bone and granulation tissue present. In acute infections which are likely to become chronic, whenever possible, bacterin therapy should be instituted promptly.

Imperfect technic and failure to heed the principles of immunity and of bacteriology underlying bacterin therapy, will not enable us to determine its value and limitations.

The writer noted in a review of recent literature in a journal of good standing, a report of a case of hay fever cured with a stock vaccine of micrococcus catarrhalis. The multiplicity of germs in the nasal passages, the technical difficulty of separating one germ, particularly one with which the characteristics of micrococcus catarrhalis the indefinite state of our pathogenicity of the micrococcus catarrhalis should be borne in mind in considering the value of such a report.

Bacterin therapy, properly used, marks a wonderful advance in accurate therapeutics of infections. Physicians should seek to accumulate clinical records which, in harmony with dependable laboratory findings, shall secure a

more accurate application of this important line of treatment. It is a natural and laudable impulse to employ every known measure in treating a disease to include suggested measures from which we may hope, if not reasonably expect results.

The writer recommends that an autogenous bacterin be employed as part of the routine treatment of acute suppurative otitis media to hasten the disappearance of the discharge and to prevent mastoid complications. In all acute otitis media cases which progress to paracentesis, it is the author's practice, at the time of the paracentesis, to obtain cultures for an autogenous vaccine. The experience of the author in this connection is illustrated in the following cases:

Mrs. A.—acute otitis media following an acute coryza—paracentesis—culture taken—predominating organisms pneumococcus and staphylococcus aureus. A vaccine containing thirty million pneumococci and 300 million staphylococci was prepared and administered in one cc. injections—the first injection three days after the paracentesis, the second four days later, and once a week thereafter. All constitutional and nose and throat therapy, free drainage and cleansing treatment of ear was done in addition to the bacterin treatment. The patient did not do very well, recovered slowly from the acute attack. The discharge continued and at the end of a month a second culture was taken which showed the same organisms as the first culture. A fresh vaccine was prepared and administered weekly in same dosage. At the end of six weeks, the discharge continuing, the patient was advised to have a mastoid operation, to which she consented. One week after mastoid operation vaccine injections were resumed weekly till healing of wound, which was completed in three weeks. The bacterin treatment, early and scientifically applied, in this case did not prevent the mastoid complication.

Mrs. B.—acute otitis media paracentesis. Vaccine prepared from culture taken at time of paracentesis. Vaccine contained 30 million pneumococci and 30 million streptococci to each cubic centimeter. Administered one cc. four days after paracentesis and one week later. Patient recovered so promptly that vaccine was used only twice. The spontaneous recovery seen in this case is so frequent an occurrence that one may well hesitate to insist that an autogenous vaccine should be made a routine procedure.

Mrs. C.—acute otitis media paracentesis. No culture taken. Discharge continued very abundant and some mastoid tenderness appeared. Cultures and smears taken on fifth day. Smears showed streptococci predominating. An autogenous vaccine was ordered and a stock vaccine of the streptococci used at once. Four days later the autogenous vaccine was begun. Patient recovered without a mastoid operation. The streptococci exhibit so many strains that it is doubtful if the stock vaccine injection had any influence on the course of the disease.

Four chronic suppurative otitis media cases have been treated with autogenous vaccine. One was cured—ear not discharging three years after treatment. Two were improved and one not improved. These cases were clinic cases in which the usual lines of treatment had been unsuccessful.

The following case demonstrates the necessity, if good work is to be done, for the oto-laryngologist to be informed and ready to apply bacterin therapy: Mrs. E., 43 years old. History of tonsillitis, quinsy and acute infectious arthritis for twenty-four years. Baths, osteopathy, serums and salicylates had been used in treating her at various times. Tonsillectomy. Tonsils greatly hypertrophied and inflamed. At time of tonsil operation was unable to use right foot and leg; the foot and knee were turned in with the toes bent down. Injections of polyvalent stock streptococcus vaccine were begun within a week and continued for ten weeks together with orthopedic correction. The improvement in the joints during this period was gratifying. The patient was able to walk for the first time in ten months ten days after the tonsillectomy. In this case a bacteriological examination of the deep portions of the tonsil crypts should have been made, cultures taken, and an autogenous vaccine prepared. An autogenous vaccine prepared from the tonsils should have been administered to this patient. The laryngologist should have an autogenous vaccine for immediate or future use, from all sinus and tonsil cases in which a metastatic infection is known or suspected, such as an endocarditis or an infectious arthritis.

Furunculosis of the external canal has been uniformly and successfully treated with a stock vaccine of staphylococcus pyogenes aureus, 600,000,000 to a dose. In recurrent cases patients are advised to have weekly injections for six to eight weeks.

Two chronic antrum cases which did not heal after all the usual surgical therapeutic meas-

ures, were apparently much benefitted by the administration of autogenous vaccines.

#### CONCLUSIONS.

1. Knowledge of bacteria producing pathological conditions of upper air passages is incomplete.
2. Serobacterins are on an experimental basis. Sound scientific foundation for their use. Combine the advantages of a passive immunity plus an active immunity.
3. Bacterin therapy indicated in treatment of sub-acute and chronic cases.
4. The specific etiologic bacterial strains must be determined before vaccine therapy can be rationally used.
5. Bacterins must be prepared with careful laboratory technic.

#### DISCUSSION.

DR. HUIZINGA, Grand Rapids: The question of vaccine therapy is just now entering a very practical stage. Any new method of treatment usually passes through three stages. First, the stage of enthusiasm and extravagant claims; second, the stage of reaction and loss of confidence; third, the practical stage when the true value of the method can be estimated from a sufficiently large experience, the extravagant claims toned down and confidence in its proper, therapeutic possibilities and limitations restored. The bacterial and serum method of treatment is entering into this third stage where we are beginning to have a proper appreciation of its value and limitations and have become a little more conservative than we were a few years ago.

I fully agree with the Doctor that these methods should not be used in acute conditions but limited to those of a more chronic nature. I had made some experiments along this line and it seems to me that in some cases I have had some very splendid results in conditions that otherwise are considered well nigh hopeless. Just to report one case that came to my office two years ago. A young man suffering from an aggravated case of atrophic rhinitis. I told him that I could not give him much relief. I explained the nature of his trouble and our limitation in being able to help him. I finally suggested that I should like to experiment with autogenous vaccine and see what it would do for him. Since the treatment was entirely experimental my services were offered free and he would pay the necessary expenses. He readily consented. The vaccine was prepared from pus taken from under the crusts from the neighborhood of the middle turbinate. Two hyperdermic injections were made each week with gradually increasing doses until the point of tolerance was reached. This treatment was kept up for ten weeks. At the end of the second week the patient began to report such improvement that he could notice a distinct reduction in the crust formation and his family and friends had noticed a distinct improvement in the lessening foulness of his breath. At the end of ten weeks the atrophy of the turbinates was still the same but the amount of discharge

and crust formation and foulness of breath has certainly improved 75 per cent. It is but fair to say that during this time no other treatment was permitted, not even a cleansing spray of Dobell. Since then, however, the other well known methods have been used and after two years his condition remains, not cured, but satisfactory improvement to him and his friends. I am well aware that it takes the reports of hundreds of cases to establish the value of any line of treatment. "One swallow does not make a summer," but "A straw may indicate the direction of the wind," so I believe that the conclusions reached in one case carefully studied and followed up will often be of greater value than the reports of hundreds of cases coming from many different sources of unknown scientific standing.

I have tried it in other cases and failed but this does not mean that it is not a success, I may not have had in the vaccine all the organisms that it should contain. Much work remains to be done in this region and while the difficulties to be overcome are greater than in other regions of the body, yet the possibilities in this field are far from hopeless. I feel free to recommend this for a thorough trial in connection with other well known forms of treatment.

This section is very much indebted to Dr. Odell for the very conservative and timely paper which she has prepared.

DR. SHURLEY: The problems of bacteriology and bacterin therapy are extremely interesting to all of us. There has been an enormous amount of literature prepared upon the different phases of bacterin therapy and there is a great deal in connection with it that is difficult to scientifically recognize or classify and we have necessarily three unknown quantities under consideration. The resistance of the patient, the variety of the micro organisms and the virulence of the micro organisms are the three quantities which are at work in this problem, consequently deductions must be more or less hazy and uncertain. It seems to me that an enormous amount of time is wasted on the report of one or two cases, as this can only be worked out by extensive laboratory and clinical investigation.

A definite rule to follow in all conditions is to consider it our duty to take a culture from all cases.

I think we have been carried away by the commercial houses. We have been promoting the business of a number of manufacturers and drug houses without any true scientific knowledge of the conditions of the vaccine used in this work. I believe that the amount of harm done by the use of stock vaccine may be very marked as some individuals are extremely susceptible. The problem is the resistance of the patient and I believe we are greatly at fault in making use of stock vaccines extensively, as it is done throughout the country.

DR. ODELL: Discussion closed: Stock vaccines are inexpensive and easily procured. It is therefore unfortunate that their scientific use is so limited. The information concerning bacteria, given in this paper, was obtained recently from the Bacteriology Laboratory of the University of Michigan. This information makes the use of stock vaccines rational in the case of only a very few of the bacteria concerned in infections of the upper air passages.

EAR COMPLICATIONS IN INFECTIONS  
FROM THE ZYMOTIC FEVERS.\*GLENN A. BULSON, A.B., M.D.  
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Of all the frequent and secondary complications occurring in the course of the specific infectious diseases, the involvement of the ear, and its related structures, is of the greatest concern by far, not only from the liability of a subsequent impairment of hearing, but on account of the dangers to life occasioned by the extension of inflammation to the vital structures of the brain in such intimate association with it.

In order to fully grasp the tendency of the ear to coincident inflammation, in the course of the zymotic diseases, we must regard the ear from a clinical standpoint, and accept the view, held by Pierce and many others, that the middle-ear begins at the pharyngeal end of the Eustachian tube and ends at the most remote spaces of the temporal and occipital bones. From the Eustachian orifice to the mastoid spaces, we have a mucous membrane, that is histologically similar throughout; and failure to consider these associated structures as integral parts of the middle-ear leads to confusion in the localization of aural complications, and a misinterpretation of the symptoms, which denote positive otitic involvement.

According to most authors, fully 25 per cent. of all chronic otorrheas are due to scarlet fever and measles; and to a lack of timely and energetic treatment of these conditions at the onset, are due the varying and annoying disturbances of hearing to which these patients are subject; and the persistence of perforations and defects, which occur more frequently from aural complications in the zymotic diseases, than from all other causes.

The middle-ear is intimately associated with the upper respiratory tract in the pathological changes incident to the exanthemata, and is involved, in greater or less degree, in the specific inflammatory reaction and angina, characteristic of these diseases. The inflammatory swelling of the rhino-pharynx extends to the Eustachian tube, producing a condition of engorgement and resultant interference with the normal circulation of blood and air through the tube and tympanic cavity. This absorption of air and the coincident occlusion of the Eustachian tube, produces a negative pressure or vacuum with consequent chronic passive con-

gestion of the vessels of the mucous membrane. We then have a condition favoring exudation into the middle-ear of the vascular elements of the tissues, and the creation of a pabulum most favorable to the growth of micro-organisms, should these subsequently find entrance into this cavity. The shortness of the Eustachian tube and its greater patency in children, makes the liability of direct extension of suppuration from the pharynx to the middle-ear very great. Further, the occlusion of the Eustachian tube by adenoids or naso-pharyngeal growths, results in persistent congestion of the tube and tympanic cavity and a resultant hyperplasia of their associated lymphoid elements. Such conditions are favorable to the growth of bacteria and the accumulation of inflammatory products in the vault of the pharynx, thus facilitating the extension of pyogenic infection to the middle-ear. This is very liable to occur during the violent attacks of vomiting and coughing to which these patients are subject. In older children, blowing the nose or violent nasal douching adds to this danger. If, after invasion of the tympanic cavity by germs, the inflammatory condition of the tube persists, we have a closed abscess cavity, the same as in the antrum of Highmore, when blocked by an enlarged turbinate, and immediate inflammation and retention follow.

Many authors have emphasized the importance of the anatomic structure of the attic as a factor in favoring the accumulation of secretion in the middle-ear and mastoid. In the region of the attic are the ossicles, which normally have a poorly vascular mucosa, which must serve both as mucous membrane and periosteum. And in intimate association with them are the folds of the middle-ear, which contain the greatest amount of connective tissue. In the course of suppurative otitis, these connective-tissue folds are capable of great swelling, thus causing mechanical interference with the proper drainage of inflammatory products from the tympanic cavity. At the same time, the pressure of the retained pus contributes to the serious ulceration and necrosis of the ossicles themselves, which are especially vulnerable on account of their poor blood supply. Observation of persistent suppurative ear conditions in the clinics of both Alexander and Neumann at Vienna, demonstrates unquestionably that these swollen connective-tissue folds are the great obstacle in the way of free drainage of pus from the tympanic cavity and mastoid. The attendant lack of drainage prevents attempts at heal-

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ing, and causes marked impairment of hearing through the formation of scar-tissue or granulations, that mechanically interfere with the normal conduction of sound to the inner ear. Likewise, the proper drainage of pus from the tympanic cavity is interfered with and the tendency to chronicity increases. Of importance here is the formation of cholesteatomatous masses, which, histologically, are composed of misplaced epithelial cells, that migrate in from the dermal layer of the tympanic membrane, or form from ulcerations in the mucosa of the tympanic cavity itself. The erosion and necrosis of bone, due to these accretions, often involves the inner wall of the tympanum or tegmen tympani, thus opening up direct channels for the passage of suppuration to the cranial structures. Necrosis of bone, so common in the otitis of these virulent infectious diseases, may involve the facial ridge and cause permanent paralysis of the facial nerve.

In the course of the exanthemata, aural complications are often overlooked and masked by the intense symptoms of the original disease and we have no positive signs that the ear is the seat of a destructive inflammation. The first indication of a severe otitis may be the escape of pus from the meatus, and at this time the mastoid cells may be involved and extensive changes already present in the bone.

The middle-ear and mastoid are involved in a much larger percentage of cases of the exanthemata than it is possible to diagnose clinically during life. Both Bezold (1) and Korner (2) found in children, who died during the prodromal stage of measles, that the characteristic catarrh of the air passages had already extended throughout the tube and involved also the mucous membrane of the tympanic cavity, with no clinical signs whatsoever, during life, indicating ear involvement. In these cases we must regard the otitic inflammation as a part of the general inflammation incident to this disease. Politzer has repeatedly demonstrated that the mastoid is involved in a large number of cases in which there are no symptoms during life of this complication.

We cannot neglect our duty or ignore the role played by the specific infectious diseases as an etiological factor in causing deaf-mutism, the importance of which is emphasized in a study of this often preventable defect in the young. In a study of deaf-mutism, Yearsley (3) found in 592 cases of the acquired form, that 156, or 26.3 per cent., more than one-quarter, owed their

origin to middle-ear disease, occurring in the course of the exanthemata.

Borden (4) of Boston, in a recent contribution, has given very significant clinical findings of the frequency of otitis in a compilation of 2,164 cases of scarlet fever, measles and diphtheria. In this series there were 746 cases of scarlet-fever, 456 cases of measles, and 962 cases of diphtheria. The middle-ear was involved in 11 per cent. of the scarlet fever cases. Measles caused aural complications in 28 per cent. And in only 2.9 per cent. of the 962 diphtheria cases examined was otitic involvement demonstrable. In order to compare the autopsy findings in fatal cases with these clinical percentages, the same author examined 252 fatal cases of scarlet fever, measles and diphtheria. He found that diphtheria, which was least in the clinical, viz. 2.9 per cent., to be highest in the fatal cases in the number of mastoids, i. e., 31 per cent. In the fatal scarlet fever cases, 26 per cent. showed mastoiditis in comparison with only 11 per cent. of ear complications demonstrable in the clinical series. And of further interest in a perusal of these findings, is the fact that only 14 per cent. of the fatal measles cases showed mastoid involvement, whereas 28 per cent. showed clinically positive otitis.

A consideration of these statistics should impress us with the enormous frequency of grave aural involvement in the exanthemata, and so stimulate us to exhaust all means of successfully combating the ravages of these diseases in the middle ear and mastoid, and to properly treat these complications at an earlier stage, before the patient is hopelessly doomed to life-long misery through permanent deafness. Only by timely, energetic treatment can this mortality be lessened and the enormous loss of hearing from these diseases be diminished in frequency.

The responsibility for the preservation of useful hearing and lessened mortality in these cases, rests squarely upon the general practitioner. It is he, who must regard a persistent aural discharge as an indication of serious bone involvement of the vital tympanic structures and a potential cause of death. It is he, who must co-operate with the aurist and insist on timely surgical intervention in suppurative ear disease, thus saving the hearing and lives of many. Otherwise the discharge continues and a focus of chronic suppuration persists in the middle-ear and mastoid cells, which, like appendicitis in the abdomen, is a latent danger on account of its great tendency to infect and

seriously involve neighboring and vital parts. And brain abscess, fatal septic infection, or meningitis may result, causing death through direct extension of pyogenic infection from the ear to the cranial cavity.

Present day otology teaches us that many of these cases result fatally through the tendency to ascribe their symptoms to the toxemia of the specific constitutional disease, and that the manifestations of grave ear complications have been completely overlooked. Safety and the preservation of useful hearing are only assured by the positive and timely surgical elimination of this suppurative aural focus.

In the light of these facts, our obligation is plain. We must not temporize in these dangerous ear cases, and, in a sense of false security, employ lotion, syringe, or powder, none of which reaches the antrum or removes the focus of disease. And if we, as physicians, are to do our whole duty in combating the destructive ravages of these virulent suppurative processes in the ear and its associated structures, we must exhaust every possible facility for early diagnosis and prophylaxis at the very onset of these grave complications. Otherwise, our hope is lost of successfully combating a purulent otitis and preventing permanent destructive tissue changes in the middle-ear and mastoid. Intervention in time, with a full appreciation of the latent dangers to hearing and life must be our consistent aim.

32 West Adams Avenue.

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#### DISCUSSION.

DR. BERNSTEIN, Kalamazoo: I think we all, ophthalmologists and otolaryngologists, alike, realize the great importance to patients, of the early recognition of the ear syndrom in the infectious diseases. We, who see the end results and the dire consequence of the infections of the middle ear have been calling attention of the family doctor to them for a long time. The warning is bearing fruit, in the better attention on their part to ear complications but a great deal of propaganda work still remains. We owe it to the public to see also, that they realize that a running ear is not the simple thing the old ladies in the neighborhood seem to think. Unfortunately there is still a large number of doctors who feel that on the relief of pain in an ear, all danger has passed and the care of suppurations is a negligible quantity. It is not always the fault of the

family doctor if the ear condition is not recognized, partly on account of the irritability of the child and at times to the fact that even the most careful otologist will fail to detect the middle ear complication, as it does not always manifest itself in the classical way, moreover it has been shown in the report of the Massachusetts General Hospital that a double infection may be present and only one side receive attention, the error only to be discovered on the postmortem table. It has been claimed the otitis is more likely to occur in those children who have adenoids. Now I do not for a moment wish to minimize the importance of adenoids in ear suppurations, but it is now known to be a great fallacy to suppose that the ablation of excessive adenoid tissue will end ear suppurations.

DR. BULSON, closing: We cannot too strongly emphasize the importance and necessity of the early recognition of suppurative otitis by the general physician, who usually sees this condition first. To say that a purulent discharge from the ear is due to a simple participation of that organ in the general systemic manifestations of zymotic diseases is to invite disaster.

#### HEMORRHAGE OF THE EAR.\*

W. E. NEWARK, M.D.

CHARLOTTE, MICH.

The external ear is made up of cartilage, connective tissue blood vessels and nerves. The blood supply of the auricle is derived from the superficial temporal artery, which in turn is one of the terminal branches of the external carotid artery, and from another branch of the later, the posterior auricular artery. In a well injected cadaver two or three branches can be seen passing completely through the pinna.

The external auditory meatus is cartilaginous and consists of a funnel-shaped division of the auricle. Its blood supply is from the same arteries that supply the auricle, except that some of the blood supply of the inner extremity of the meatus is derived from the arteria auricularis profunda, which is a branch of the first portion of the internal maxillary artery.

The veins of the external ear are the anterior, and inferior auricular. They empty into the temporal vein, which, in turn, conveys the blood into the external jugular vein.

The middle ear is divided anatomically into the three divisions: the cavity of the tympanum, Eustachian tube and mastoid process. The tympanic cavity which contains the auditory ossicles, is situated at the inner termination of the auditory canal. It is bounded above by the roof, the tegmen tympani, internally by the external wall of the internal ear and externally

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by the *membrana tympani* and the superior wall of the external meatus. The auditory canal is an irregular shaped funnel about one and a half inches in depth; the external wall is the tympanic membrane or drumhead which forms the fundus of the canal and is the external boundary of the tympanic cavity.

The tympanic membrane is composed of three layers, an external (cuticular), a middle (fibrous), and an internal (mucous). The *arteria auricularis profunda* furnishes the dermal layer and the *arteria tympanica inferior* a branch of the *arteria stylomastoidea* supplies the mucous layer with blood. The attic of the tympanic cavity is bounded externally by the bony wall which forms the inner end of the roof of the external osseous meatus. The roof or upper wall of the tympanic cavity consists of a thin plate of bone which is an extension of the superior surface of the petrous portion of the temporal bone. It is continuous with the superior surface of the mastoid portion.

It should not be forgotten that the plate of bone forming the superior wall of the tympanum is exceedingly thin, less than a millimeter, although certain skulls show a thicker plate of cellular structure. The floor is formed by a lamella of bone extending from the lateral inferior surface of the petrous portion of the temporal bone. This plate of bone forms not only the inferior surface, but assists in forming the posterior and anterior surfaces also of the tympanic cavity. Anteriorly it is in close relation to the carotid canal and inferiorly with the jugular fossa. The intimate relations of the tympanum to the internal carotid artery and the internal jugular vein are of the highest importance since a suppurative tympanitis may result in caries of the carotid canal and consequent fatal hemorrhage, or an invasion of the jugular vein, eventuating in venous phlebitis and thrombosis.

The anterior wall, which is deficient at the upper part, is formed of the anterior process of the lamella of bone which forms the floor of the tympanum. Above the superior termination of the anterior wall is the opening of the tympanic orifice of the Eustachian tube.

The tympanic cavity is lined with mucous membrane, which is continuous with the membrane lining the Eustachian tube and the nasopharyngeal space, on the one hand, and, on the other, with the membrane lining the mastoid antrum and cells.

The blood-supply of the middle ear is derived

from the external carotid artery principally, a few arterioles being supplied by the internal carotid. Small branches from the ascending pharyngeal artery, a branch of the external carotid, supply the Eustachian tube and its membrane, as well as the membrane lining of the tympanic cavity. The middle meningeal artery before entering the cranium, gives off small branches to the Eustachian tube. Within the skull it sends the superficial petrosal branch through the hiatus Fallopii to anastomose with the stylo-mastoid artery. The stylo-mastoid artery, derived from the posterior auricular artery, supplies small branches to the posterior tympanic wall, the stapedius muscle, the neuri-lemma of the facial nerve, and to the mastoid cells. The internal carotid artery sends minute branches into the tympanic cavity through small orifices in the carotid canal of the petrous bone. A small branch of the stylo-mastoid artery supplies the middle portion of the Fallopiian canal. It supplies the stirrup and the adjacent obdurator membrane and is named the artery of the stapes. The tympanic artery is derived from the internal maxillary and enters the tympanum through the Glaserian fissure and anastomoses with the stylo-mastoid and Vidian arteries. It supplies the *membrana tympani* and the external auditory canal. The temporal artery gives off small branches which enter the tympanic cavity through the Glaserian fissure.

The veins of the middle ear accompany the corresponding arteries, and drain the blood into the veins of the external auditory canal through the *membrana tympani*, into the plexus of veins of the carotid canal surrounding the artery, into the veins of the dura mater by way of the petrosquamous fissure, into the pharyngeal veins and those of the maxillary articulation. Politzer has demonstrated direct connections between the blood-vessels of the middle ear and those of the labyrinth through the intervening osseous wall. This intimate relation of the blood-supply of the adjacent cavities easily accounts for labyrinthal symptoms resulting from vascular disturbances in the tympanic cavity.

The auditory artery, which is a branch of the basilar artery, accompanies the auditory nerve to the labyrinth. Hence it separates into two branches, one to the membranous cochlea and the other distributed to the semicircular canal and the vestibules. The veins correspond to the arrangement of the arteries. The cochlear vein opens into the internal jugular vein. The vestibular veins opens into the superior

petrosal sinus, and the auditory vein follows the auditory artery and joins either the transverse or the superior petrosal sinus.

#### ETIOLOGY.

Hemorrhage from the ear may be due to several causes and diseases as pronounced anemia, leukemia, rheumatism, exposure to intense sun's rays, pneumonia, diabetes, exanthemas, arteriosclerosis, traumatism, such as blows, incised wounds, explosion of shells, firing of cannons, typhoid fever, and some drugs. Bishop mentions some cases of hemorrhage from the ear from the giving of large doses of quinine and salicylic acid. My colleague, Dr. Knight, mentions two cases of hemorrhage in old people, a man and wife, in convalescence from pneumonia. Hemorrhages from the ear following scarlet fever are quite frequent, especially when mixed with a purulent discharge. Tuberculosis of the ear also is apt to be followed by discharge of pus, necrosis of the bone and hemorrhage.

Jingken reports a case of fatal hemorrhage from a congenital naevus, (Phillips page 155). Phlegmatous growth of a sero-sanguinous nature, epithelioma, and malignant growths of all kinds, may cause severe bleeding. Angioma is not uncommon, and varies in size from the small superficial enlargement of the capillaries to a large cirroid aneurism (W. S. 845). Treatment varies according to the size of the tumor. In small superficial growths, thermocautery, dissecting or ligating are necessary, and in large growths removal of the whole auricle by amputation, and sometimes it is necessary to ligate the common carotid. Severe bleeding may occur by wounding hematomatous growths which are difficult to stop. Yüngkens reports a case in which he had ligated the common carotid to prevent a severe hemorrhage which was threatening at the time of operation. The writer's brother had a growth of this kind on his ear which became wounded several times and the doctors tried several methods of controlling the hemorrhage. Our father controlled it by putting on a silver clamp, which, by tightening several times, caused a sloughing off of the growth.

Careless incisions of the tympanic membrane may be followed by severe bleeding, because sometimes the blood-vessels are not in their normal position. Care should be used in curetting the inferior tympani wall for at times it is thin and necrosed and one might wound the jugular vein. Discharge of pus and blood from cases of scarlet fever, tuberculosis may cause

more or less necrosis of the bone as well as the soft part, leaving the blood-vessels exposed. Severe hemorrhages may occur during the operation upon the mastoid, such as wounding the sinuses and may be very difficult to control. Several cases are reported of wounding the carotid which gives great alarm to the operator and they are sometimes very difficult to control. Extensive necrosis of the bone about the ear may occur in syphilis, enough to cause sloughing of the parts so that the vessels are open and fatal hemorrhages occur.

Hemorrhages into the labyrinth may occur from necrosis, blows on the head, boxing the ears, fractures, explosions and exhaustive labors during the hot summer months, all of which will cause dizziness and roaring in the head. Severe bleeding will cause deafness, unconsciousness and death. Numerous cases of vicarious menstruation are reported. Politzer reports a case of a young girl who was menstruating, suddenly became dizzy with roaring in the ears, followed by deafness, profound shock and death. Autopsy showed blood in the labyrinth.

Cases of Meniere's disease are rare and one should be on their guard against cases of this kind. One must be on the lookout for cases of hysteria who may assimilate all the symptoms of Meniere's disease, even to the extent of putting blood into the ear, and thus gain sympathy of their friends. The symptoms of the disease are profound shock, vertigo, nystagmus, roaring in the ear with deafness.

The suppurating disease of the middle ear may cause embolism in the sinuses and arteries which may quickly prove fatal. The symptoms following a thrombosis may vary according to the location in which it may lodge and have to be recognized accordingly. Localized hemorrhages may occur although less frequently in the crura cerebri, pons, floor of the fourth ventricle and cerebellum. In these situations they quickly prove fatal by causing rapidly advancing coma and interference with the respiratory and cardiac centers. The temperature immediately rises to 106 or even 108 degrees and a modified form of Cheyne-Stokes respiration is present. Extensive caries of the temporal bone may extend to the carotid canal, particularly to the vertical plate. The adjacent walls of the carotid artery become infiltrated with granulations, suppurates and a fistula is formed which leads to a fatal hemorrhage. In such cases, the artery becomes thrombosed before rupture occurs. If we have profuse bright red blood,

pulsating from the ear and through the Eustachian tube, we will know that this condition has occurred. Thrombosis of the carotid artery may be followed by embolism of the brain.

Hemorrhages may occur from the use of instruments in attempting to remove a foreign body from the ear. Hemorrhages of this kind are usually controlled by keeping the patient quiet, cold to the ear and by packing.

Last year the writer had a case of a girl about three years old who forced a doll's head into the ear and broke it off. Several attempts were made under an anesthetic to remove the small, round head which was pressed deeply into the auditory canal, but which could not be removed on account of the blood. It was necessary to make an incision back of the ear and turn the whole soft tissue forward when it came out easily.

#### TREATMENT.

Treatment in hemorrhages of the ear means rest in bed and quiet. In hemorrhages from fractures, gun shot wounds, sterile dressings and cold applications to the head may be all that is necessary in the most of cases. In hemorrhages from pneumonia, diabetes, suppurative otitis media, the tympanic cavity should be wiped out carefully and packed. With rest and cold applications, it is probably all that is needed.

In the removal of external growths, each case must have treatment according to indications. Most cases of hemorrhages of the ear will stop without any great loss of blood by simple rest in bed and cold applied.

What first called the writer's attention to this topic was a case which I will briefly relate.

Mr. B. aged 32, married. None of his family had ear trouble. As a child had whooping cough, measles and mumps. In Kalamazoo, five years ago, he had the first attack of hemorrhage from both ears and nose and several physicians saw him. Never has fits but before the attack there is a feeling of pressure in back of the head. Had an attack in June of this year when I saw him. Had some rise of temperature, severe headache that morphine did not control. Hemorrhage was severe enough to wet the bed. Headaches always feel relieved after hemorrhage. Had several attacks less severe than the last one during the past five years and now has occasional hemorrhage in both ears. Examination shows a perforation of the tympanic membrane. Blood pressure 115; no history of syphilis. Kidneys normal.

Am sorry to say I intended to have X-Ray plates made, and provided time and opportunity for him to do so, but he has been so careless that it has not been done. I believe there

are many cases of deafness due to syphilis and I believe particular attention should be given to this form of the disease. Hemorrhages in this disease will be treated similar to the rules already given, also proper anti-syphilitic treatment.

#### AURAL CONDITIONS FOLLOWING CONTAGIOUS DISEASE.\*

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DETROIT, MICH.

The matter which I wish to present today is based upon the observation of 950 scarlet fever and 1,025 diphtheritic cases in regard to the ear conditions arising during the course of the disease seen in the past three years in the Herman Kiefer Hospital of Detroit.

The statistics of such institutions will vary considerably in different epidemics, depending upon the season of the year, the community from which such patients have come and other complicating diseases. Many of the children came from charitable hospitals or from the homes of the poor and with the reduced vitality due to the unhygienic surroundings constitute the great number of the seriously sick cases. Upon such facts depend many of the differences in the statistics of the various hospitals so that the results can only be considered in a general way.

In 1912, out of a series of 318 cases of scarlet fever we had twenty-one ear suppurations or 6.6 per cent. with three mastoids or .9 per cent.

In 1913, out of 337 cases twenty-five ear suppurations or 7.4 per cent. with four mastoids or 1.1 per cent.

In 1914, of 295 cases reported to May 1 twenty-five ear suppurations or 7.8 per cent; five mastoids or 1.8 per cent.

Showing a grand total of 950 cases with 7.2 per cent. ear suppurations and 1.2 mastoid.

This percentage is apparently very low when compared with those of Downey (Glasgow) with 12 per cent. aural complications, Caiger 11 per cent. Borden (Boston) in a report of 746 cases with 11 per cent. But what we have reported here are actual suppurative otitis media and mastoids requiring operation.

There were some cases of mastoiditis not requiring operative procedure which were in combination with the acute suppurative otitis which are not recorded separately, but appear in the percentage list of suppurative otitis. One case of mastoiditis in which the symptoms of

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temporal bone involvement came before any disturbance in the drum head was evident, which is rather out of the ordinary, and, according to Ruttin is probably due to the streptococcus mucosus. In this case there was a rapid destruction of the mastoid with subperiosteal abscess and no apparent inflammation of the tympanum. At the time of operating, rather as an experiment, I did not do a paracentesis but was forced to do so three days after because of severe earache which upon inspection showed an active inflammation. In general it seems to me the cases reported not requiring paracentesis which I have not listed would bring the percentage of aural complications to about the same as the above writers.

In the diphtheria pavilion out of 1,025 cases of diphtheria there were but five cases of suppurative otitis media and not a single case of mastoiditis. There were three cases of otitis that did not require paracentesis. This does not mean, however, that evidence of mastoiditis might not have been shown post mortem, for, as Borden states in his paper reporting post mortem statistics upon mastoiditis following contagious disease, "of the fifty-nine cases of mastoiditis only six or eight were recorded during life and of that number operation was performed on one side only when both sides were diseased." It is true that this report gives a wide range varying from acute congestion to complete destruction, and it is undoubtedly the case that acute congestion can only be shown post mortem.

This wide variance in the clinical and post mortem findings makes one feel that, particularly in cases of scarlet fever, when our resources are pretty well exhausted in determining the causation of annoying rises of temperature, with which we are all familiar in the course of the disease, may be due to toxic products originating in one or both mastoids.

In our diphtheria cases there may have been some in which the fever came from mastoid involvement but there was not a report of a case complaining of mastoid pain or tenderness. This I remember distinctly as I was rather interested in the sparsity of mastoiditis, not having a single case in a total of 1,025 and would have given any case the benefit of the doubt had they developed any of the symptoms.

In the bacteriology of ear suppuration occurring in diphtheria none of them showed a pure culture of Klebs Loeffler but were found in combination with streptococcus, staphylococcus, and pneumococcus. The rapidity with which

these cases stopped discharging, none of them extending over a period of fifteen days, when compared with the almost never ending flow from the ear of the scarlet fever patient in which we found the same bacteria is remarkable. In the case of a child with scarlet fever in which we find streptococcus and Klebs Loeffler in the ear discharge; upon visiting the hospital we received the same report each day, ("ear still discharges, Klebs Loeffler and streptococcus still present"), until one begins to wonder if the child will ever go home. In the diphtheritic case we are confident at the outset, despite the fact that the same bacteria are present, that the tympanum will soon heal and the child will leave the hospital in about two weeks. This brings us to the conclusion that there must be a marked difference in the strain of the streptococcus and its virulence, or that in scarlet fever there is another factor which raises such havoc with the resistance of the body at the onset by its increased demand upon the vital organs that the mucosa of the Eustachian tube and the middle ear devoid of phagocytic power become a pool of infection and is destroyed both by direct bacterial action or by the acrid secretion; just as the retained secretion in the eye of a case of gonorrheal ophthalmia destroys the cornea.

The service of vaccine therapy used only in scarlet fever cases in our hands has been admittedly poor when compared with the report of others. One realizes that the factor to be borne in mind in using the vaccine is to get the correct active vaccine, the correct dosage and the correct interval between injections, all of which is undoubtedly hard to regulate and good results can only be obtained when we have developed the ability to feel our way along and watch the systemic reaction of each individual case, avoiding severe reaction with the resultant depression, yet giving the body sufficient stimulus to continuously resist. This can only be done, it seems to me, by one who is expert in this line. The results must depend to a considerable extent upon whether there are deep changes in the tissue or not. In the acute stage is the acceptable time to give a vaccine for I think it is generally conceded that if there is bone destruction no vaccine can be of much value.

Cultures (S) reported by Dr. Kiefer and Ferris has been used with some success in the alleviation of some of the general symptoms of scarlet fever but has not changed the percentage of aural complications in this disease.

One is inclined to believe, however, that acute

ear suppuration will some day be regulated by some form of bacterial therapy, but at present the result coming from those not expert and upon whom work must depend, has not been good.

We shall now consider some of the factors conducive to middle ear suppuration. Every case of otitis media following scarlet fever showed upon inspection the typical facies of complete nasal obstruction. Upon the insertion of the tongue depressor with the resultant contracture of the palatal muscles when gagging a few drops of sero pus trickled down the posterior wall of the oro pharynx; upon digital examination the naso pharynx was full of succulent infected tissue almost gangrenous in appearance, so much so in fact that one hesitates in making the examination with the unprotected finger and really wonders that the Eustachian tube does not permit of more infection than we actually find.

The problem that confronts us now is how shall we drain this area, and in children, at least, the only refuge we have is in the hot nose and throat irrigation given with as little force as possible which we use as a routine. Infecting the middle ear by such treatment is undoubtedly possible, but if the force of the stream is minimized and not prolonged the possibility is much lessened for it is not what you wash out as much as what the heat does in re-establishment of the vascular control in the stagnant venous plexuses of the nose.

In the consideration of this factor of nasal obstruction I thought it advisable at the time of doing the paracentesis for the acute otitis media to do at the same time an adenoid operation, not with the thoroughness used regularly but sufficient to remove most of the tissue and permit drainage, and it seemed to me that the period of suppuration was considerably shortened and patient more comfortable. One might suppose that there would be a grave possibility of infecting such an operative wound and consider it a surgical error to attempt it, but in accord with other moves we make in medicine which seem to be contradictory there was no infection and the results good, probably because the lymphatics of this region were sufficiently blocked by micro-organisms to prevent any sudden influx and the resultant general disturbance.

The difficulty in diagnosing middle ear complications, as may be noted from the difference between the post mortem and clinical findings, is great. This is partly due to the age of the

majority of the patients where pain, although it is our best symptom, is to some extent eliminated from the situation. Temperature is usually seen but is so uncertain that it cannot be relied upon. Fretfulness is generally present, and although at first thought a rather insignificant symptom, yet such a report from an efficient nurse arouses our suspicions at once and is frequently what brings us to a careful examination of a case and we find the swelling of the drum membrane, which is our conclusive evidence of the beginning otitis.

When the diagnosis is made there is but one course and that is a thorough incision of the tympanum. This is particularly true in otitis media complicating scarlet fever. In a few cases the attempt was made to prevent the progress by the ordinary medicinal combinations such as cocaine, carbolic acid and glycerin drops, but upon returning the next day the ear was discharging not freely, finally requiring opening or else the whole drum head had become gangrenous and sloughed away. The establishment of drainage is easy, but keeping the opening from blocking may require several incisions and thorough irrigation. We have always used ether in incising the tympanum in children and nitrous oxide in adults with no untoward results. From what we have seen the irritative effects of ether upon the kidney have been much over-estimated; not even those patients suffering nephritis at the time of administration showed ill effects.

We use a hot saline irrigation two or three times a day with the instillation of some combination of antiseptics such as bichloride of mercury, alcohol and formalin drops once a day. The frequency of the irrigation depending upon the amount of discharge. I do not feel that powders have shown satisfactory results except in suppurative otitis where the discharge is small which is generally not the case in the acute and subacute stages of otitis media following contagious diseases.

In the treatment of mastoiditis, heat is the most agreeable applications; cold is always objected to by the patient and probably masks the symptoms.

When mastoiditis has developed we cannot afford to hesitate too long as the toxins will in many cases soon overwhelm the resistance of the body and jeopardize the life of the patient. We have to return now to the same proposition of drainage as mentioned before in considering abscess of the middle ear and this again is comparatively easy. The problem comes as to

how we shall close the wound so we will have the best drainage, the quickest healing and the least trouble with persistent fistula.

The method of closing with a blood clot is least favorable with this type of case, because there is usually considerable active pus present which is liable to infect the clot and you are forced to open wound and pack in the usual way. When I see the tardiness with which this dressing heals, the tendency to a permanent fistula and the fact that at each subsequent cold the mastoid is liable to break down again, it seems that a closure of the posterior incision, with the making of meatal skin flap and dressing through the external auditory canal is a good substitute. This I have tried twice with much better results than previously. I grant the dressing is long and tiresome but not more so than the average case in the simple operation and there can be no fistula either persisting or re-appearing with succeeding colds. The suppuration may begin again but it has an outlet and there is no absorption of toxic materials. This is not advocated as a routine in the least, but in those cases in which there is such a tendency to persistent discharge singularly noticeable in ear suppuration following scarlet fever it may prove helpful.

It would seem that there is a tendency on the part of surgeons doing mastoid work to have their minds set before beginning the operation that they will do a simple or a radical procedure with the feeling that there is only two ways and any deviation from these stereotyped methods is rather indicative of lack of training.

I have seen in the service of Dr. Campbell wonderful results in blood clot work. True, these were selected cases for this operation but is not every case a law unto itself and might we not always adapt our procedure to meet the exigencies of the case, that is, be more elastic, even though we be different from the text book?

The only death we had of those cases in which a mastoid was done followed one week after the operative procedure. The child had a nephritis at the time of operating and later developed a severe acetoneuria and death apparently came as sequence of the general disintegration seen in those cases of fulminating scarlet. We have had no cases of labyrinthitis or brain abscess and none of meningitis due to aural complications.

## INTRA-NASAL AND PHARYNGEAL INFECTIONS IN THEIR RELATION TO THE EYE AND EAR.\*

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The close proximity of the organs of the head favors a correlated pathological activity. The eye and ear are near the nose and nasopharynx and have immediate communication with them through the tear ducts and Eustachian tubes, as well as through the lymphatics, the blood vessels and the nervous system; hence, disease in one often gives rise to certain symptoms or diseases in the other.

It is not uncommon to observe an inflammatory condition in the eye simultaneously with or following a similar process in the nose and it is a well known fact that inflammations of the epi-pharynx sometimes extends through the Eustachian tubes, by continuity of tissue, to the middle ear. Also that nasal discharges, especially when there is an empyema of the accessory nasal sinuses, usually pass backward into the epi-pharynx and cause irritation and inflammation in this region.

Complications resulting from accessory sinus disease are of great importance, as shown by the investigations of recent years. Their anatomical relations to the orbital cavity and the optic nerve are so intimate that frequently, by continuity, contiguity and mechanical pressure, intra-nasal infections produce diseased conditions in the orbit, optic nerve and eyeball.

The frontal sinus adjoins the orbital cavity at the junction of the superior and internal walls, the ethmoids form a large portion of the internal wall, the maxillary sinus is in direct relation with the inferior wall and often only a thin layer of bone separates the optic nerve in its close relation to the sphenoidal sinus and the posterior ethmoidal cells.

The ethmoidal veins and arteries course intracranially for a short distance and a direct communication also exists between the veins and lymphatics of the nasal mucosa and dura. It has also been shown that a considerable portion of the venous blood from the anterior sinuses finds its way into the ophthalmic vein.

The ophthalmic artery supplies not only the eye by the central retinal artery, anterior and posterior ciliary, lachrymal and muscular, but as well gives off the anterior and posterior ethmoidal branches supplying these nasal and accessory cavity structures. The orbital veins anastomose with the veins of the nose and acces-

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sory cavities, as well as those of the face, and the scheme of this venous system well shows how the outflow from the eye can be affected by changes in the ethmoidal branches.

If inflammatory disease in the accessory or nasal cavities produce a hyperemia or a venous stasis of these parts, the circulatory relation is such that the vascular conditions in the eye are changed and the functional comfort of this organ will be disturbed and where conditions form a more marked departure from the normal and systemic conditions are such as to favor the spreading of foci of disease, it is easy to see how pathological changes are brought about.

The relationship of the lymph stream from the orbital structures to those of the nasal tissues has not been so well demonstrated but this may furnish a possible means of transfer of infection.

The most frequent causes of complications in the orbit are anatomical, by the presence of defects in the bony walls separating these structures and pathological from stagnation of secretions in the sinuses through obstruction to free drainage.

Defects in the superior or orbital wall of the maxillary sinus rarely occur, dehiscence is not infrequently found in the frontal and then the periorbital tissues come in direct contact with the sinus mucous membrane, defective formation is most frequently found in the lamina papyracea and favors the formation of orbital abscess. In the sphenoid defects always occur in the superior or lateral walls and seem to appear more frequently than defects in any of the other sinuses.

Disturbances in the circulation produce hyperemia, thrombosis of the central retinal vein, causing blindness, and thrombosis of the cavernous sinuses.

From intoxication the optic nerve is affected. This is more particularly associated with sphenoidal empyema in which there always exists more or less obstruction.

In purulent inflammations the continual apposition of the purulent secretions results in maceration of the epithelium, which gradually pervades the entire mucosa until it becomes, in certain areas, loose on the underlying bone. In this manner the material slowly infiltrates through the canaliculae and Haversian canals and eventually reaches the periosteum on the opposite side. From here on there is but little resistance to the spread of the infection.

Ordinary acute suppurative inflammations of the nose may be due to streptococcus, pneumo-

coccus, staphylococcus aureus and albus, bacillus pyocaneus, bacillus coli and the bacillus of influenza. Pathogenic micro-organisms are never present in normal sinuses, the mucous membrane, under ordinary normal condition being able to render inert and expel the germ. Infection begins with an attack on the cell by the microbic agent, wherever it may be and the fight is on. Leucocytes are attracted to the region, there is hyperemia and swelling of the mucous membrane and glandular secretion is exaggerated. At first the mucus carrying leucocytes in considerable number, is thick and tenacious; later, thin and purulent and as the degenerative process progresses other parts are involved, unless good drainage is established, in which event there is a prompt recovery.

The literature of reported cases covers conditions varying in severity from hyperemia and mere pain to panophthalmitis. Orbital cellulitis, abscess, exophthalmus, edema of the lids, periodic episcleral congestion and optic neuritis include the greater number of these cases aside from the functional ocular disturbances or purely superficial lesions of the conjunctiva.

There is no phase characteristic of these lesions by which, from them alone, the positive conclusion can be drawn that they are of nasal origin. Sixty per cent. of the cases of orbital inflammations are of known nasal origin, so the actual per cent. is probably higher.

In retrobulbar neuritis of sinus origin the first symptom is an enlargement of the blind spot for color and later on for white. Isolated scotoma or intermediate ring scotoma may also appear, but the nasal disease must be found to establish it as a cause.

The external muscles of the eye are in such relation to these cavities that their function can easily be involved, this being particularly the case with the superior oblique.

Dacryo-cystitis arising in the course of maxillary and ethmoidal inflammations has been observed many times.

Infections of the nasal cavity and nasopharynx are not only frequently the starting point of affections of the middle ear, but also through continuity and through obstruction to nasal breathing, exert an important influence on the course and termination of middle ear affections. The nasopharynx has been known as the cause of a very large percentage of aural disease for generations, but owing to its inaccessibility it has been given scant attention.

The Eustachian tube is admitted the most

common if not the only path by which bacteria reach the tympanic cavity. Conditions of lowered vitality is a predisposing cause and renders the individual more susceptible to suppurative middle ear lesions. Only in this way can be explained the enormous prevalence of suppurative otitis media among the ill nourished and poorly housed children of the poorer classes.

Children suffer more frequently than adults, due in part to the influence of pharyngeal adenoids, to their greater susceptibility to acute infectious fevers and to certain anatomical differences in the Eustachian tubes in infancy and childhood, as compared with the adult.

Just what percentage of cases of the acute exanthemata give rise to aural disease has not been determined and were the ears of all children suffering from these diseases examined daily, there is little doubt that a larger per cent. of cases of acute tympanic disease would be diagnosed than is represented by those usually attracting the physician's attention.

The purulent otitis media associated with measles is of severe average type and the percentage of cases developing suppurative mastoiditis is particularly large.

The inflammation complicating scarlet fever comes next to that associated with measles in the frequency which the mastoid cells are involved. Another serious and characteristic feature of scarlatinal otitis media is the great rapidity with which the drum membrane may be actually destroyed.

As compared with measles and scarlet fever the ear complications of diphtheria are mild and infrequent and there is greater danger of extensive destruction of the drum head than of rapid and serious involvement of the mastoid.

Grippe or influenza is a frequent cause of more or less severe ear disease and in certain epidemics shows a marked tendency to rapid involvement of the mastoid.

Parotitis or mumps seldom causes tympanic suppuration but when the ears do become involved the labyrinth as well as the tympanum is not infrequently involved.

In conclusion, when we are dealing with infections of nose and nasopharynx we should go into the minutia of the parts involved and study carefully their relationship and by careful observation of cases, aided by transillumination and skiographic pictures, we will then become more able to appreciate the many of the hitherto ill-defined and obscure symptoms, and particularly the cause for many of the abnormal ocular manifestations.

No two specialties or specialists ought to be more intimately related than the oculist and oto-rhinologist and these two frequently need the co-operation of the internist, radiographer and laboratory expert.

#### ACUTE AND CHRONIC SINUSITIS OF NASAL AND PHARYNGEAL ORIGIN.\*

FERRIS N. SMITH, A.B., M.D.

GRAND RAPIDS, MICH.

This subject is so large, indeed it might well be the title of a text, and the time allotted for its discussion so brief that aside from merely alluding to the etiology and symptomatology of the acute conditions and their bearing upon the chronic symptomatology, it will deal largely with the cause, diagnosis, and treatment of the chronic conditions.

If one excepts the pathology of the maxillary sinuses which is consequent upon dental infection, it may rightly be said that the great percentage of all accessory sinus conditions are of nasal and pharyngeal origin. The acute involvement may or may not occur in a nose anatomically normal, but it most frequently occurs in that nose presenting anatomical abnormalities. This abnormality may consist of an hypertrophied or diseased adenoid, a post nasal neoplasm, septal hypertrophies and deformities with contact, hypertrophies of the turbinates and lateral walls, a large bulla or a large cell in the anterior end of the middle turbinate, (1) but whatever may be its nature, it is accompanied by a local or general stasis which mechanically obstructs drainage and ventilation, robs the mucosa of its vascular protection and renders infection easy.

Sufficient is known of their anatomy, physiology and of the physical effects of proper nasal ventilation and drainage to demonstrate the ease with which sinus involvement may occur by direct infection in the presence of a healthy nasal mucosa (2); by extension from an acute rhinitis; by drainage from an overlying sinus; and, secondarily, as the result of tuberculosis (3), lues or malignancy. The direct involvement is quite characteristic of influenza (4) croupous pneumonia (5) and diphtheria (6).

Extension by continuity is probably by far the most frequent occurrence in sinus disease.

Foreign bodies through the nose are an occasional source of infection.

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Several factors determine the chronic state. Notable among these is an idiosyncrasy of the patient; frequent mild infections; virulence of the infecting agent; obstruction to normal drainage or a viscid, tenacious secretion; and continuous drainage from another sinus.

Pathology of a chronic sinus may consist in hyperplastic changes, varying in all the stages from a simple hyperemia to the degenerative processes and, more rarely, to ulceration with necrosis and caries (7). This latter condition is generally found in the invasions of scarlet fever.

The prevalence of chronic sinuses is variously estimated from 3 to 6 per cent. by clinicians (8) and from 17 to 47 per cent. (9) by pathologists examining bodies dying from all causes. The latter figures are manifestly too high and, it seems equally certain, that the former are too low.

Perhaps no class of cases so tries the patience of the practitioner nor gains so little sympathy and real medical assistance as the individual complaining of a general or localized headache, a feeling of lassitude, myasthenia, depression and melancholia. Such a patient may complain of irresistible sleepiness during certain periods of the day or merely a periodic or constant localized headache. The practitioner is prone to think first of auto-intoxication and give a cathartic; secondly, of the patient's eyes and send him to an oculist and lastly to make or have made a cursory examination of the nose and, if no pus or contact is noted, the patient is dismissed as a neurasthnic (19) or hysteric. It is just such a patient that frequently suffers from persistent pathology in the accessory sinuses and needs treatment. It is well to recall the intimate connection between the vascular and lymphatic circulation of the nose and brain as well as the relations of the nerves in this region and those supplying the scalp and face. Further, one should keep in mind the intimate anatomical relationship of the nasal fossa and accessory sinuses to the brain.

The presence or absence of pus in the nose is no indication of accessory sinus disease. Pus may originate in the nasal mucosa and the sinuses may be sterile or the empyema of the sinuses may be of the closed type and the nose may be clean. Nor is pus essential to the production of the symptoms. The whole condition may arise from a simple catarrhal process with only edema in the nose as an evidence. Nor is local tenderness and pain an excluding sign.

It may be well to review the chief symptoms

—both subjective and objective—and the cardinal points in differential diagnosis. Probably the most frequent complaint of the patient is secretion in the nose and naso-pharynx. We have just observed that the presence of secretion in the nose is not typical of sinus infection. Nor is the location of the secretion or its consistency and amount any criterion (10). Pus which reappears quickly at a given point after wiping and about the locations of the ostia is diagnostic. However, pus is frequently absent at the time of examination. This is especially true of morning examinations where the maxillary and sphenoidal sinuses are involved. The presence or absence of secretion at a given time is also influenced by its consistency and the size of the ostium.

Almost as frequent as the presence of pus is the presence of headache. Hajek states (11) that its absence is of no value but that its presence is very important in the total symptom complex. He says "Many cases of sinus disease with slight nasal symptom go through their entire lives with the diagnosis of chronic headache, taking all manner of cures without it ever occurring to anyone that the headache might be caused by a structural disease in the immediate neighborhood." The causes of the headache are variously given by Skillern (12) as pressure upon or irritation of the nerves, contact of swollen mucus surfaces, vascular and pressure changes in the cavity, ulceration with nerve involvement, toxic absorption, and vascular and lymphatic changes at the base of the skull.

The intensity of the headache has no proportion to the disease and may vary from a "dull, heavy feeling" to an acute neuralgia. These conditions may be constant or may occur at intervals of hours or days. The sensations are generally localized along one or more branches of the fifth nerve (13). Grunwald states that the headache occurs in about 50 per cent. of the chronic cases.

Tenderness above the inner canthus of the eye is diagnostic of frontal inflammation and is occasionally elicited over the canine fossa. Dizziness, vertigo and marked physical disturbances are not infrequently characteristic (20). Subjective sense of foul odor, cacosmia, is diagnostic and anosmia is frequently the result of chronic irritation with its consequent hypertrophy. A history of asthma, frequent bronchitis, and gastric disturbances should call attention to sinuses.

The diagnosis of sinus involvement and its

exact localization not infrequently requires several consecutive examinations at various times of day. The history of the symptoms detailed are frequently of considerable assistance. However, the final judgment must rest upon the results of a careful inspection, instrumentation, and the use of physical accessories.

Eczema of the anterior nares is frequently present as the result of either catarrhal or purulent drainage. Certain changes in the lateral nasal wall furnish strong presumptive evidence for a diagnosis. Early among these in the catarrhal state, one notes edema and stippling of the bulla and anterior lip of the uncinat process when the first group of sinuses is involved. At a later stage, hypertrophies (7) and atrophies are the rule. The hypertrophy may be fibrous or polypoid, if one considers a polyp a progressive rather than a degenerative change. These hypertrophied areas are generally found in the region of the drainage opening and the area of atrophy is below this point.

In the case of involvement of either group, inspection of the naso-pharynx, pharynx and larynx may furnish considerable evidence. An acute or chronic inflammation of one or both lateral bands is practically diagnostic (14), while a dry pharyngitis almost invariably results from the constant irritation of sinus drainage. This is particularly true in those cases where the condition is most marked in the naso-pharynx and gradually diminishes as the lower limit of the pharynx is approached. Thick, dry, tenacious mucus is generally present in the naso-pharynx.

The larynx frequently presents hyperemia and inflammatory changes in the ary-epiglottic folds and arytenoid cartilages and chronic capillary congestion with thickening of the true cords.

A simple differential procedure suggested by Yankauer frequently establishes the source of the foregoing symptoms in accessory sinuses. Steam inhalation shrinks the mucosa and favors drainage. A partial or total relief is positive evidence (10).

When secretion is evident, it must always be followed to its source. We will suppose that pus is seen in or below the middle meatus. It will be our purpose to localize the source in one or all of the sinuses of this group. First, the pus is mopped away and, if it quickly reappears, we can be sure that it does not originate in the nasal mucosa. Now we make an effort to examine the maxillary with a catheter by fracturing

the middle turbinate toward the septum and attempting to catheterize the normal or accessory ostium. This rarely succeeds but should always be tried. This procedure failing, a needle puncture is made through the inferior meatus and the cavity inflated. A bubbling sound shows the presence of secretion. Its mere presence, however, does not establish its source since it may have drained in from an overlying sinus. The antrum is now liberally irrigated and the meatus inspected again in two or three hours. If no pus is present, then the antrum is the seat of disease but, if pus is seen, it must come from the frontal or ethmoids or, probably, both.

An attempt is now made to sound the frontal sinus without resecting the middle turbinate, but this generally fails. In the event of success by either procedure, the sound is replaced by a catheter and the cavity is inflated. Any secretion will be seen coming down at the highest visible point on the catheter. If secretion is present, the cavity is carefully washed and the opening plugged by cotton smeared with sterile vaseline. Several hours later another examination is made. If no pus is seen in the middle meatus, then the maxillary has only acted as a reservoir and is not infected. If pus is seen in the meatus and also drains down when the plug is removed, we have established the pathology in both sinuses. Further, if the frontal is involved, it is practically certain that the ethmoids are also implicated.

When the pus is found in the olfactory slit or above the posterior end of the middle turbinate in the choana, a similar procedure must be carried out to localize its source in either the posterior ethmoid group or the sphenoid sinus or in both. The posterior half of the middle turbinate is resected and the sphenoid catheterized. The patient may now either lie down for an hour in order to prevent sphenoidal drainage or the sphenoidal ostium may be plugged with vaselined cotton and re-examination made in several hours. At this time, the presence or absence of pus on the outer surface of the cotton plug will settle the condition of the ethmoids and the condition of the sphenoid is settled by the presence or absence of drainage upon removal of the plug.

The X-Ray, (15) in the hands of the expert only, is a valuable adjunct in the building of a diagnosis and determining treatment. Not only must the operator be expert, but the interpretation must be made by one with expert knowledge of plates of this type. It should be remembered that a shadow does not necessarily

indicate pus but may result from a thickened mucosa alone, pus alone, or the presence of both (16). The plates have the greatest value when there are unilateral shadows. They are reliable for the frontal sinus and anterior and middle ethmoidal cell groups. The efforts of Spiess, Pfeiffer, Pfahler and Skillern have produced a technic which gives good pictures of the sphenoid and posterior cells (17).

Transillumination should only be considered as a confirmation of other findings and is never of diagnostic value *per se*.

The treatment of these conditions, when no complication threatens, must be influenced by the social status of the patient as well as by the pathology in a given case.

In all cases, septal deformities, polypi, hypertrophies, etc. should be removed and good drainage secured. The constitutional state should be regulated. Beyond this, either the patient's personal desire or his occupation will determine, to a great extent, the procedure to be adopted. Having secured good drainage, it remains to treat the diseased mucosa. The simplest procedure commensurate with the condition should be attempted first and this will generally consist of frequent, copious lavage with saline and the careful drying of the cavity. Many of these cases heal without other interference. If no improvement occurs, some form of radical surgery must be considered. These procedures are too numerous for discussion here.

Vaccine therapy (18) has recently demanded considerable attention and acquired some enthusiastic supporters. Personally, I have yet to see a cure in a chronic case that can be absolutely attributed to either a stock or autogenous vaccine. However, in those mild cases which do not demand immediate relief it should be tried. The theory is alluring and possibly

the failure in my cases can be credited to stock vaccines which were not potent or to autogenous vaccines poorly made.

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#### PROPAGANDA FOR REFORM.

*Agar-lac.*—Agar-lac, sold by E. Fougera and Co., is stated to be composed of "Agar-Agar with Lactic Ferments Grs. 4½, Phenolphthalein Grs. ½." Regarding the "lactic ferment," the expert of the Council on Pharmacy and Chemistry reported that *Pacillus Bulgaricus* were present in small numbers only and that there were at least two other bacteria present. The Council refused recognition to Agar-lac because its composition is not correctly declared, because it is exploited in a way to cause laymen to use it to their detriment, because unwarranted therapeutic claims are made for it, because its name does not indicate the most potent constituent, phenolphthalein, and because the use of a ready-made combination of cathartic drugs with lactic acid fer-

ments is unscientific (*Jour. A.M.A.*, Nov. 14, 1914, p. 1777).

*Papine (Battle and Co.)*—This is a simple aqueous alcoholic solution of morphin, 1 grain to each ounce. It is exploited under the utterly unwarranted claim that it does not nauseate constipate nor create a habit (*Jour. A.M.A.*, Oct. 17, 1914, p. 1411).

*Eckman's Alterative.*—Eckman's Alterative is a "consumption cure" patent medicine consisting essentially of alcohol, calcium chlorid and cloves. Now the Eckman concern is running a series of advertisements in which medical writings on the use of calcium in tuberculosis are twisted into recommendations for the nostrum (*Jour. A.M.A.*, Nov. 7, 1914, p. 1686).

# TRANSACTIONS

## OF THE

### Clinical Society of the University of Michigan

Stated Meeting, November 10, 1914

The President, HOWARD H. CUMMINGS, M.D., in the Chair

Reported by REUBEN PETERSON, M.D., Secretary-Treasurer.

#### SOME POINTS IN THE DIFFERENTIAL DIAGNOSIS OF CEREBELLAR ABSCCESS AND CEREBELLAR LUES.

R. BISHOP CANFIELD, M.D.

(From the Otolaryngologic Clinic, University Hospital).

I wish to report the following case, which exemplifies the difficulties of a differential diagnosis between cerebellar lues and cerebellar abscess.

The patient presented is Miss O., age 22. Family history negative. Personal history negative until eight years ago, when she caught cold, and a bad earache, left ear, lasting for six weeks at which time the ear ruptured and a large amount of pus escaped. This discharge continued for several months during which time she was weak and generally run down. However, she recovered from this condition and since then her ear has been somewhat sensitive to cold. She had measles as a child but has always been well and strong and has led an active life. On June 15, 1913, she complained of earache which had lasted for three days with a temperature ranging from 99° to 105°. At this time she was seen by her physician, who states that there was a small perforation in the tympanic membrane. This opening was enlarged and the temperature fell to normal. On the second day following the paracentesis, there was a copious discharge of sero pus. Three days later, a second paracentesis was done. The discharge continued until July 28, when an X-Ray examination was made by Dr. R. J. Read, of the Battle Creek Sanitarium, who reports that the left mastoid showed a large irregular shadow extending backward to the region of the lateral sinus. On August 6, a simple mastoid operation was performed. The fol-

lowing report is that of Dr. Colver, and shows his operative findings:

"The patient being in the right lateral position, an incision two and one-half inches in length was made three-eighths of an inch behind and parallel with the base of the left auricle. When the bone was exposed, there was some bleeding which recurred on being sponged away. The mastoid mass was extremely hard and showed practically no pneumatic cells. The lateral sinus was exposed very superficially and not far posterior to the external auditory canal. Rather free bleeding resulted, which was promptly checked on packing quarter-inch iodoform gauze into the wound and against the side of the membrane wall. The antrum was opened and a free passage into the middle ear was established. Quarter-inch gauze was packed into the wound and it was closed with three silkworm gut sutures and Michel clips. After twelve days' stay in the surgical ward, she was removed to her room in the building in the Ladies' Annex, returning every other day for dressings. Following this operation the circulatory disturbance of the lateral sinus resulted in a serous labyrinthitis, which gradually cleared up in the course of several weeks. On the 15th of February, 1914, she again consulted me in regard to headaches, which were in the frontal and temporal region and I found that the middle turbinates were markedly crowded. I removed the anterior third of both middle turbinates, and this headache was practically relieved, following recovery from that operation. Throughout this period of time, however, there was pain and tenderness above and behind the left mastoid, and continued tenderness over the left frontal sinus. X-Ray examination failed to show any sinus infection."

*Examination on Entrance.*—Patient well

built and well nourished, apparently a healthy girl with a somewhat square head and expression of the central part of the face suggestive of congenital lues. Physical examination, negative. Nose and buccal cavity, negative, except for the fact that the upper media and lateral incisors show the evidence of caries. This caries, the patient states, began a few weeks after the operation and has persisted. Before the operation, the teeth were apparently in perfect condition. Ears: Whispered voice, 20 feet. Weber not localized, Rinne, positive. Bone conduction, 10 seconds, both sides. High limits normal, low limit normal. Otoscopic examination, negative. Mastoid wound perfectly healed, scar satisfactory. Spontaneous rotatory nystagmus somewhat staggering in character, of  $1^{\circ}$  to both right and left, rather more marked to the left. This nystagmus varies in degree and is not always present. Patient's chief complaint is a sense of dull pain over the frontal and left occipital regions. Turning test shows after nystagmus, rotatory in character, somewhat wild, of twenty seconds to the left after turning to the right. The nystagmus to the left is rather more marked than is that to the right. Caloric test positive. No fistula test. Patient was referred to the ophthalmologic clinic, report from which is appended:

The vision O.D. 5/5, O.S. 5/5. Tension with tonometer, 18 in both eyes. Reflexes, normal to A.C. and D.

Ophthalmoscopic Examination: O.D. Media clear. The nasal side of the disc is elevated about one diopter above the temporal border; slight depression of the vessel entrance, but the whole disc is higher than the retina, the highest point of elevation about two diopters. The disc has a pearly grayish color. Scattered through the elevation are innumerable glistening, slightly granular appearing hyaline bodies, mostly confluent, extending in every direction sufficiently to obscure the disc border. The perivascular tissue is quite conspicuous in the central portion of the disc. There is a secondary ring about the disc reminding one of the condition antecedent to the development of myopic ataphyloma. The arterial reflex stripe is somewhat conspicuous; the veins are somewhat tortuous, the macular veins especially so, some of the inferior veins having corkscrew characteristics. Several of the macular vessels on the temporal side also show corkscrew characteristics. One of the inferior nasal veins is tortuous and makes a complete loop. The foveal reflex is distinct; surrounding the foveal reflex

there is a yellowish stippling irregularly distributed in the foveola; the remainder of the macular area is apparently normal.

O.S. Media clear. The general appearance of the disc is much like that in the right eye but the hyaline bodies are not so developed; the elevation is about two diopters; there is less depression at the vessel entrance; the glistening bodies are more confluent and less conspicuous but distinctly present on the nasal side of the disc. The arterial reflex stripe is much broadened, markedly conspicuous especially along some of the vessels; the veins are tortuous; the superior nasal vein shows a complete loop similar to that observed in the other eye. The macular vessels are tortuous and somewhat corkscrew like. Very distinct arterio-venous compression but no distal dilation. The foveal reflex is present; the foveola is not granular as was described in the other eye.

O.U. The disc is elevated from two to three diopters, due to hyaline bodies deposited on the disc. There is no true neuritis nor choked disc.

O.D.  $\div .25$  combined with  $\div .75$  axis 90 gave 6/5 vision.

O.S.  $\div .25$  combined with  $\div .50$  axis 90 gave 6/5 vision.

The patient was wearing  $\div .25$  combined with  $\div .25 \times 90$  in O.U. and wished to postpone a change of glasses until the diagnosis had been completed. We enclose a copy of the visual fields. The contraction of the color fields appear to indicate a lowered activity of the cone elements of the retina. Whether this is associated with the inflammatory process of the macular bundle or to some other cause, it is difficult to say.

The salient points in her history are as follows: Acute suppurative otitis media in June, 1913, accompanied by temperature apparently out of proportion to the severity of her infection, the character of the discharge, seropus, being suggestive of streptococcic infection; the necessity for a second paracentesis, speaking for extensive infection; the injury to the sigmoid sinus at the time of operation; the fact that she enjoyed four weeks of satisfactory convalescence before the appearance of nausea, vomiting, vertigo, staggering and headache, (with the possibility of spontaneous nystagmus); persistence of headache, vertigo, and pain in the occipital and frontal regions, and the steady progression of caries of the upper teeth since the operation.

Our preliminary findings showed a well developed, apparently healthy young woman, with rather square head and slight frontal bosses,

wide palpebral apertures and caries of the upper teeth, and the expression about the central part of the face, suggestive of hereditary lues. Examination of the field of the operation showed an excellent result, the ear being dry, membrane closed and mastoid healed. The hearing test was very significant in that with good hearing for high and low notes and for conversational voice, she showed marked reduction of bone conduction on both sides. She showed spontaneous rotatory nystagmus of  $1^{\circ}$  to both sides, more marked to the operated side. This nystagmus, although vestibular in character, is not of a pure type. It is somewhat staggering in appearance, its components being somewhat larger than seen in labyrinthine disease. This nystagmus varies in intensity from time to time, and is not always present. In this clinic such a nystagmus is considered characteristic of some disturbance at the base. Caloric and turning tests produced the customary reaction, but accentuated the irregularity and staggering appearance of the nystagmus. Her pointing faults are atypical.

In view, then, of her history we had to consider cerebellar abscess, cerebellar meningitis of pyogenic origin, and basal syphilis. If we set aside the fact that she had had a mastoid operation, during which the sigmoid had been injured, her history and picture would be that of congenital lues, the sudden appearance of the symptoms of which oftentimes are noted after some operation for injury or intercurrent disease. Caries of the teeth is frequently seen during the increase in size of a brain abscess or tumor. Commenting upon the fact that her bad symptoms occurred four weeks after operation, I would like to say that the appearance of such symptoms at a time so far removed from the operation is usually the result of something not associated with the operation, although there is a possibility that the infection in the mastoid and consequently in the sinus at the time of operation in a worn out patient might be a very low grade and slowly extending leptomeningitis. I suggest that she did not have serous labyrinthitis, but that she did have basal disease. Had she had serous labyrinthitis, there would have been more disturbance in hearing than she seems to be able to remember. She tells me that when her nausea, vomiting and headache came on, four weeks after operation, there was no change in the hearing of the ear on that side. At the time of the first examination I stated that I had never seen a hearing test like hers in any condition other than lues,

consequently I believe that she had lues. Of course, she might also have cerebellar abscess, because the possibility of injury to the inner wall of the sigmoid sinus could not be absolutely ruled out. Consequently, I had a Wassermann examination of the blood made, but it was not positive. Being convinced that she did have lues, I sent over another specimen, and referred her at the same time to Dr. Parker whose report is above. The second Wassermann came back positive. This enables me to substantiate my clinical diagnosis of congenital syphilis, the manifestations of which are brought into evidence following the mastoid operation.

Hearing tests have been made on three sisters of the patient, one four years older, one two years older, and one two years younger than the patient. These hearing tests developed the fact that in all cases the bone conduction was decreased, while the ears were otherwise normal. This led to the opinion that they also had congenital lues, although no other definite evidence of disease could be recognized and their Wassermanns were negative.

The patient was now referred to the clinic of Neurology where she was examined by Dr. Camp, who discovered stigmata of hysteria, but stated that no evidence of gross lesion of the central nervous system had been discovered. In the absence of all neurologic findings, we had only otological findings upon which to make a diagnosis. The presence of nausea, vertigo, headache and rotatory spontaneous nystagmus of  $1^{\circ}$  to both sides, were strongly suggestive, while the fact that the after nystagmus was normal, and the reaction to caloric was marked and pointing faults were atypical were corroborative evidence.

Further report on this case will be made later.

#### DISCUSSION.

DR. UDO J. WILE: This case of Dr. Canfield's is of more than usual interest. I think it illustrates a number of points very strikingly. First, the importance of not operating upon patients who have syphilis in a latent period. Many complications of the disease other than the syphilis which is present are likely to arise, and the syphilis itself is often made worse by such procedure. It is, of course, often impossible to determine in any given case whether there is a lues present or not. But a case such as this illustrates the importance of submitting every patient who is to be operated upon, certainly to a careful examination and a blood test before operating upon him. I am sure that the surgeons will agree that a great deal of chagrin and injury could thus be saved.

Secondly, the possibility of both these conditions being present, as Dr. Canfield has brought out. The patient has symptoms of cerebellar abscess and basal

meningitis, and that is particularly interesting in view of the fact that the patient has become worse since her treatment was begun. That is in line with a very peculiar clinical fact when a suppurative condition is present in lues. The cure of the suppurative condition seems to light up the lues, and vice versa. It is difficult to understand just why this should be so, but it is a clinical fact that is undeniable.

The last point which I think is of great importance, is the valuable information that can be obtained from this hearing test, or loss of bone conductivity which Dr. Canfield has worked out so extensively. Since I have been in this service several cases of syphilis have been revealed to me which I should not have recognized, had it not been for this decreased bone conduction. And in these cases where there was no sign of syphilis present, where the Wassermann reaction was negative, subsequent history of the patient proved definitely that Dr. Canfield's contention was right and that there was a syphilis. I don't think that this patient had a Herxheimer reaction. This reaction usually occurs in the presence of a large number of spirochaeta, usually in the secondary period. It usually subsides very rapidly. It is under very rare circumstances strung out for a week or ten days.

I may say that many of our early cases of syphilis have been sent back with a report of decreased bone conduction in the first few months of the infection.

DR. CAMP: I don't feel that I can add very much to Dr. Canfield's exposition of this case. I believe the case was examined by Dr. Klingmann and I remember going over the case, looking especially for some signs of syphilis of the nervous system. To the best of my recollection I was unable to discover anything that would show that the patient had any diffuse syphilitic process of the nervous system.

DR. THEOPHIL KLINGMANN: There is nothing that I can add except that the examination was strikingly negative aside from the nystagmus which Dr. Canfield mentioned. So far as any signs of congenital syphilis are concerned, there is nothing we can demonstrate.

DR. CANFIELD: Three children in this family all have this decreased bone conduction in ears otherwise normal. That is the hearing test characteristic in lues, i. e. decreased bone conduction in ears otherwise normal. It occurs to me that it would be most instructive to make a Wassermann test upon her spinal fluid immediately before operation and then a test upon her blood and spinal fluid after she has gotten well.

In answer to Dr. Barrett's question I may say that as far as I know, no pathologic material is available to demonstrate decreased bone conduction in lues. This observation was first made about ten years ago when I was working in the clinic at Halle. I noticed that a child with interstitial keratitis and a suppurating ear had a decreased bone conduction which could not be explained upon the basis of a suppurating ear condition. We then sent out into the countryside and brought in a considerable number of children in families that we knew were specific, and we demonstrated a decreased bone conduction in a certain number of them, and it appeared before the keratitis. Every case of this kind so far as I know,

in an otherwise normal ear, is luetic; and there is no pathologic material otherwise available for this work. However, it seems to me it might be explained upon the basis of a mild low grade basal cerebro-meningitis. It has been so firmly fixed in my mind that this is an important symptom that Dr. Wile and I are now exchanging patients frequently, in many of which we are able to demonstrate this decreased bone conduction, in a much greater number, I am sure, than has been suspected.

While it is not always present paretics I have been able to demonstrate it in a number of instances.

I don't want to be understood to say that every patient having a decreased bone conduction is specific, but every patient having an otherwise normal ear and decreased bone conduction is a specific patient.

### OSTEITIS FIBROSA WITH THE REPORT OF A CASE.

JAMES VAN ZWALUWENBURG, M.D.

(From the Department of Roentgenology, University Hospital).

The patient whose radiograms I shall show you by lantern slides came to the Hospital, accompanied by his home physician for diagnosis of an obscure condition affecting both hips and supposed to be tuberculous.

He was about 14 years old and for a number of years had complained of indefinite deep-seated pain in both hips, beginning first on the right, and later on the opposite side as well. With this had developed a peculiar gait and some deformity. Several months previous, he had met with an accident, supposed to be a fracture of the right femur from very inadequate cause. An X-Ray had been taken with a small outfit, but the resulting plates were not very satisfactory, and the physicians in attendance were unable to interpret them. He was treated as a case of fracture of the neck and recovered with an exaggeration of the deformity which had been noticed before.

The boy was otherwise well built. He walked with a waddle which strongly suggested double coxae varae. His thighs presented a very marked deformity with an outward and anterior bending of the femora and an apparent shortening of this portion of the extremities.

The X-Rays which will be shown later, were interpreted as those of "osteitis fibrosa," sometimes called von Ricklinghausen's disease.

This condition had been occasionally seen previous to the X-Ray era. Virchow has described several cases seen at autopsy, and studied histologically. Other isolated cases of unusual "bone cysts" occur in the literature. With the use of the X-Ray, the number of cases increased rapidly. Still the condition must be considered a rare one.

Von Ricklinghausen, in 1904, published his observation on cases occurring in adults and characterized by a substitution of the normal bony tissues of the diaphyses by a fibrous tissue. The radiograms revealed sharply circumscribed areas of diminished opacity usually longitudinally striated, but without involvement of the periostium or the formation of distinct bony shells about them. The disease is insidious in onset and, except for the deformity and liability to spontaneous fracture, runs a benign but slowly progressive course. The lesions are usually multiple and symmetrical. The diaphysis of the long bones of the lower extremity are the sites of elections, although it has been found in other of the tubular bones and even in the ribs. The flat bones are spared.

With the substitution of fibrous for osseous tissue, is often found the formation of cystlike areas, more or less globular, without tissue differentiation of the interior as seen on the plates. They do not break through the bony cortex, and excite no periostitis in the neighborhood. Although spoken of as cysts they are probably not hollow cavities filled with fluid, but highly vascular and cellular masses, and accordingly have given rise to the opinion of many pathologists that this condition is neoplastic in nature.

Where a considerable length of the long bone is involved there is an increase in its long diameter. This is well shown where the tibia is affected and fibula escapes. Here, the increased length of the tibia cause the development of curvature, often resulting in a well developed double reverse or "S" curve.

More recently, Miculicz has attempted to differentiate a similar disease occurring in early youth and characterized by a greater tendency to cyst formation and with less well marked longitudinal striations. This he calls "*Osteodystrophia juvenilis cystica*." The majority of observers, however, believe the true condition identical except insofar as the pathology is modified by the normal tendency to growth in immature individuals.

To the initiated, the differential diagnosis on radiographic ground is comparatively simple. From the inflammatory diseases of the bone, viz. osteomyelitis, tuberculosis, and syphilis, it is distinguished by the absence of any evidence of secondary reaction in the neighboring tissue, (sequestration and periostitis). From rickets, it is distinguished by the absence of the characteristic changes in the epiphyses. The neoplasms offer greater difficulties. Multiple metastatic carcinoma may give very similar pic-

tures, without, however, the striations characteristic of this condition. Sarcomata rarely occur as multiple lesions, show an early tendency toward rupture through the bony cortex and frequently show bony spicules as slender striations radically arranged from the point of primary growth. Primary multiple intraosseous enchondromata are rare except on the fingers and toes, although they do occur in the long tubular bones. According to Rumpel their characteristics are, a sharp demarcation from the surrounding osseous tissues, early deformity of the cortex by pressure from within, changes in the architectural arrangement of the bony trabeculae in the immediate neighborhood and their partial absorption with substitution of structureless cartilage, thinning of the cortex without any evidence of periosteal irritation. Between these two the diagnosis may be very difficult, but usually the striations already mentioned as characteristic of this disease is easily found and serves to establish the diagnosis.

To the uninitiated the condition presents many difficulties and many cases have been subjected to curettage under the suspicion of an osteomyelitis or have undergone amputation for sarcoma. Neither of these procedures is warranted by the benign, slow growing nature of the disease. Even the spontaneous fractures usually heal kindly with abundant callus formation under the ordinary routine treatment.

If we concede the propriety of separating von Ricklinghausen's from von Miculicz's disease as a separate entity we will probably have to classify the case under discussion with the latter as "*Ostiodystrophia juvenilis cystica*." The occurrence of the so-called cyst in the adults, the presence of the striation in the very young, and the numerous transitional forms all justify us, we believe, in accepting the essential identity of the two conditions and in adhering to the older name and the earlier conception of the disease.

#### DISCUSSION.

DR. C. G. DARLING: I fear that I must plead guilty to the doctor's last plate. This patient presents a very remarkable history. At least it coincides very clearly with the case of the patient which I expect to report later. This was a patient with a diagnosis of a sarcoma, and because objection was made to amputation, the patient consulted me. My only reason for disagreeing with the diagnosis was the fact that a thin shell of bone still remained. I removed the material from this cyst, sent it to Dr. Warthin, who pronounced it sarcoma. The patient wished to know if there was any way of avoiding amputation. I told her that there was some possi-

bility of good from the treatment of Coley's serum. I have had her under observation for over a year, and there has been no sign of a return of the disease. This brings out very prominently the point which Dr. Van Zwaluwenburg made about the danger of making a diagnosis of sarcoma in some of the cystic formations of bone, or the patient has a sarcoma and has been cured by Coley's serum.

PARAPLEGIA DOLOROSA TERMINATED  
BY APLASTIC ANEMIA—ANEMIC  
CHANGES IN THE SPINAL  
CORD.

JOHN W. SHERRICK, B.S.

(From the Neurologic Clinic, University Hospital).

The case that I wish to report is important, clinically, chiefly from the point of view of diagnosis but is also interesting with reference to the apparent etiology of the condition. From the pathologist's point of view there are a number of things which are distinctly unusual. I would call especial attention to the coincidence of the changes in the spinal cord characteristic of anemia, with paraplegia dolorosa which is due to carcinoma or other malignant tumor of the spine. Also the question as to whether or not the aplastic anemia in this case was due to the extensive involvement of bone marrow. The extensive destruction of the pancreas, without apparent symptoms due to loss of function of this organ, is interesting and also the very peculiar metastatic distribution of the tumor in this case.

The patient, Andrew G., was admitted to the Neurologic Clinic of the University Hospital July 8, 1914. He was a railway mail clerk, 30 years old and unmarried. His family history was negative except that his paternal grandmother died of cancer. His parents and eight brothers and sisters were living and well. The patient was a man of good habits and had enjoyed good health up to his present illness. There is no history of typhoid fever and no venereal disease. He was injured in a railroad wreck in December, 1913, being thrown against a mail rack, bruising his back. He went back to work immediately and continued work until some time in May, though suffering from pains in the back and "sharp, shooting pains" in different parts of the body, especially the legs and from the waist downward, although at times he had them in the left arm. Treatment by his home physician for rheumatism with aspirin, phylacogen, etc., did not relieve the pains and he was forced to take large doses of morphine. Anesthesia and weakness in the legs appeared

gradually and for two weeks before his admission to the Hospital he was confined to a wheel chair, during which period he had incontinence of feces and retention of urine.

On his admission it was noted that he was a well built, well nourished man. His skin was pale but warm, smooth, moist and elastic, panniculus moderate, and musculature firm. There was no enlargement of the thyroid gland or cervical lymph nodes. Examination of the thorax was negative. The heart beat was strong, muscular sounds predominating; there were no murmurs. It was impossible to make a satisfactory examination of the abdomen because the patient could not lie down on account of pain in his back. The back was negative on inspection but in the lumbar region the spine was tender at the place where he said he was injured in the railroad accident; no deformity could be felt. There was marked edema of the feet and ankles, with pitting on pressure. The temperature was normal; pulse averaged around 100 per minute and respirations about 20. His blood pressure was 150 mm. Hg. A catheterized specimen of urine was amber colored and acid reaction; albumin positive by heat and nitric acid and acetic-ferrocyanide tests; glucose negative; and microscopic examination showed no crystals, no red blood cells, some white blood cells, epithelium and numerous hyaline and granular casts. At a subsequent examination (July 16, 1914) there was noticed a white precipitate in the urine, which appeared well below the boiling point, probably a small amount of Bence-Jones albuminose. An examination of the feces showed a normal, formed stool, greenish brown in color, no food remains. Microscopic examination showed no fat, no parasites, no mucus, no starch, and no meat fibers. The Guaiac-turpentine test was positive.

At this time the patient was mentally somewhat confused, possibly due to the morphine he had had. The pupils were equal, the left responded promptly to light, the right was a little sluggish, both reacted in accommodation. There were no extraocular palsies, no nystagmus. The tongue protruded straight, no tremor nor atrophy. There was no facial palsy and speech and deglutition were normal. The biceps and triceps reflexes were prompt; and there was no ataxia, no atrophy and no deformity in the upper extremities. He could flex and extend his knees but weakly and could not stand. The knee jerks and Achilles reflexes were absent. Plantar irritation caused no distinct movement of toes on either side. There was no atrophy nor

deformity of the legs. He had retained sense of motion and position in the toes and normal pain sensibility, but had some difficulty in localizing sensations below the knees. The eyegrounds appeared normal.

A Wassermann reaction on the blood was negative.

As a result of the history and examination to this point three diagnoses were considered: traumatic myelitis, traumatic osteitis of the spine and tabes dorsalis. A traumatic myelitis could be fairly definitely excluded by the history of the very slow onset and the time which elapsed before there were any paralytic phenomena; also by severe sharp pains which are very uncommon in chronic myelitis. A disease of the spine, with secondary involvement of the cord, by pressure on it and upon the spinal nerve roots would explain the symptoms. The sharp pains, the lost tendon reflexes in the lower extremities, and the apparent slight sluggishness of the pupil to light suggested the possibility of tabes. To settle this question, a lumbar puncture was attempted by Dr. Camp, July 10, 1914. The needle passed in with no resistance but no fluid was obtained on repeated attempts. It was observed that the needle was apparently passing through the lamina of the vertebra with very little, if any, more resistance than through soft tissues. Some bloody material was aspirated from this softened bone and examined microscopically. The specimen contained cells of the bone marrow and Dr. Warthin, who was asked to examine the specimen, could find no definite tumor cells, although these were specially looked for. Giant cells were found but it was impossible to differentiate them from bone marrow cells. The evidence was conclusive, however, that some definite pathologic process was at work, causing softening of the bones of the spine and with the finding of only bone marrow cells in the aspirated specimen, it was thought that this might be either myeloma or chloroma. This conclusion received some support from the X-Ray report, which was that the first to the fourth lumbar vertebra was normal, "the fifth lumbar was indistinct with upper border hazy," "no distinct pathology" (Dr. Van Zwaluwenburg), a report which is compatible with a process causing softening without gross destruction. The diagnosis of destructive disease of bone marrow was further supported by the blood examination, July 20, 1914, at which time the red blood cells were 1,520,000, white blood cells 7,560, and hemoglobin 23 per cent. The stained specimen was examined in the Medical clinic

and reported as "severe secondary anemia" and was examined by Dr. Warthin who considered it typical of "aplastic anemia."

The blood examination, July 22, 1914, showed 11 per cent. small lymphocytes, 4 per cent. large, 2 per cent. transitionals, with 83 per cent. polymorphonuclears. Degenerate cells were rather numerous and careful search showed only three normoblasts and two megaloblasts. A rather striking thing in the blood picture was the small size of the red cells, the presence of (basophilic ?) granules in most of the polymorphonuclears, the apparent decrease in the platelets, and the absence of regenerative forms. Dr. Osler describes aplastic anemia as characterized by a progressive primary anemia met with in young adults, running a rapid course without remissions, with death occurring in a few months. The bone marrow is aplastic rather than hyperplastic. The color index may be low, hemorrhages are common and often very severe with purpura; there may be a leucopenia, and erythroblasts are generally absent. The blood picture in this case, together with the symptoms described above, is, on the whole, quite characteristic of this condition but differing somewhat in that we have here the bone marrow involved by a carcinomatous process which would not necessarily involve all the bone marrow.

The patient gradually became weaker and developed bedsores. He had repeated severe hemorrhages from the nose and from his puncture wound, some bleeding from the urethra and tarry stools. His penis and scrotum were edematous and catheterization was difficult. An examination by Dr. I. D. Loree showed no urethral obstruction, no enlargement of the prostate. On July 22, it was noted that the patient was irrational, very loquacious but jumped from one idea to another, did not recognize that he was in Ann Arbor or that he was sick, was anxious to get back on his "run," had very vague ideas of persecution, non-systematized. His mental condition was similar to that described as present in some cases of pernicious anemia, by Dr. C. D. Camp and others. He did not seem to suffer unless he was moved or handled. An examination of the organs of the thorax was negative. The abdomen was distended and too tender for palpation. The blood pressure was 120. His temperature that evening rose to 107° F, by axilla; pulse to 104; respiration 46; but the temperature dropped to 101° the next day. Blood cultures were made on blood agar and in beef bouillon, and

incubated, but they showed no growth. Blood counts were made daily from July 24 to July 28. The red cell count averaged around 950,000. The white cell count fluctuated between 3,800 and 15,000; hemoglobin, about 12 per cent., by the Miescher method. The leucocytosis is explained from the infection of the bed sores. The stools were examined on the 25th and 28th of July and were normal; no microscopic fat present. He developed numerous purpuric spots on the body and extremities, and grew gradually weaker. He died July 31, 1914, at 7:40 a. m.

A postmortem examination was made by Dr. A. S. Warthin, at 10 a. m., the same day. The report of Dr. Warthin is as follows; Primary carcinoma giganto-cellulare of the pancreas. The gland substance was almost wholly replaced by a neoplasm made up largely of stroma with nests of epithelial cells, carcinomatous in character and undergoing hyaline degeneration (chromatic necrosis and vacuolization). The tumor infiltrated the mesentery and retroperitoneal fat and there were secondaries (metastatic) in the vertebral bone marrow; retroperitoneal and bronchial nodes; periosteal and intravertebral discs, psoas muscles, adrenal capsules, and left testes. The testes showed patches of syphilitic orchitis. There were no secondaries found in the lung, kidneys, liver, or spleen.

The brain and spinal cord were removed and examined by Dr. Camp. No gross pathologic changes were present in the brain. The body of the sphenoid was so soft it could be cut with scissors and a piece was removed for microscopic study. The spinal dura was firmly adherent to the bodies of the vertebra and there appeared to be a thick extradural exudate which, at about the level of the twelfth thoracic segment, manifestly compressed the spinal cord. Microscopic examination of the central nervous system showed the brain to be normal. The spinal cord showed no infiltration of the pia, and no changes in the bloodvessel walls. There was a diffuse, non-systematic degeneration of the spinal cord which was most marked in the thoracic region and which was of the type described as due to severe anemia. In additional sections from the lowest thoracic segment there was an area of softening in the lateral column. The Marchi osmic acid stain showed a recent degeneration diffused throughout the entire white matter of the cord, not confined to the areas of anemic degeneration. At higher levels this recent degeneration was systemic and included the columns of Goll and the anterolateral

ascending tracts. It would appear that two distinct pathologic processes were present; first, a compression myelitis in the lower thoracic region and, second, the spinal cord changes due to severe anemia. The extradural mass was composed of tumor similar to that described by Dr. Warthin as giganto cellular in the vertebra. Attached to a nerve root seen in a section of the first cervical segment there was a microscopic collection of these cells. Similar cells also infiltrated the second lumbar posterior root ganglion. It is likely that the other root ganglia were similarly involved. The ganglia showed very little, if any, degeneration.

The neurologic manifestations in this case are very satisfactorily explained by the necropsy findings. The slow onset following trauma, the sharp pains due to pressure upon and involvement of the posterior root ganglia and, finally, the paraplegia due to pressure on the cord itself. The aplastic anemia was probably accounted for by the medullary bone involvement and it in turn accounted for the characteristic anemia changes in the spinal cord which complicated the neurologic findings. There were apparently no symptoms indicative of involvement of the pancreas, no glycosuria, no fat in the stools, etc.

In attempting to explain the peculiar distribution of the metastasis of the primary carcinoma in the pancreas, the only theory that I can advance is the influence of the traumatism to the spine in determining its course.

I have to thank Dr. A. S. Warthin for the necropsy report and Dr. C. D. Camp for permission to report this case from his clinic and for the report of the microscopic examination of the nervous system.

#### DISCUSSION.

DR. C. D. CAMP: I think Mr. Sherrick deserves great credit for his careful laboratory work which was of so much assistance in the diagnosis of this case. I was interested in this patient from the time of his admission to the Hospital. I well remember that the first diagnosis which presented itself was that of traumatic myelitis based on the history of the case and the obvious findings; but the fact that the condition was progressive, and also the fact that he had marked pains of a typical nerve root character, rather excluded that diagnosis. The loss of knee jerk and the characteristic pains suggested a diagnosis of *tabes dorsalis*. A careful neurologic examination excluded that diagnosis. The lumbar puncture evidence showed that we evidently were dealing with a tumor of the spine for it was possible to feel this tumor with the lumbar puncture needle. The microscopic examination of the material removed apparently showed no tumor cells, and that seemed to exclude carcinoma, but perhaps the strong-

est reason for making a diagnosis of myeloma was the aplastic anemia, which was characteristic and which developed before our eyes, going from a practically normal cell count down to 900,000. This, so far as I know, has not been reported in cases of metastatic carcinoma of the bone marrow, and there are only a few cases on record where it has been found in myeloma or chloroma.

It is also interesting why this man should not have had any signs of involvement of the pancreas when Dr. Warthin reports that the pancreas was almost totally destroyed. I feel sure, however, that he had no such signs. The stools and urine were examined daily.

DR. VAN ZWALUWENBURG: I may be allowed to say a few words concerning the radiograph of this spine. Diffuse carcinoma of the spine can only be recognized by a loss of contrast compared with the normal. It follows from this that the radiographer must develop a very definite technic so that he may be able to tell the difference between a poor plate due to poor technic and one on which the spine shows poorly for reasons of its own. This is the second case in which I have made this error, simply because my technic was not sufficiently perfect for me to recognize that the fault was not mine, but was due to the pathology.

#### A CASE OF MYELOGENOUS LEUKEMIA TREATED WITH BENZOLE AND ROENTGEN RAY.

HARRY B. SCHMIDT, M.D.

(From the Clinic of Internal Medicine, University Hospital).

A. G. male, age 32, farmer, American, married, entered the University Hospital, Nov. 23, 1913, complaining of enlargement of the abdomen and shortness of breath. Family and personal history are negative. Present illness began June, 1913 with progressive weakness. In October, 1913 he became short of breath and noticed a dragging pain in the left side under the short ribs. This pain has gradually become worse. Aside from losing twenty pounds in weight and an occasional slight fever for the past month, he has no other complaints. He has never noticed any hemorrhages into the skin, his stools have never been tarry, nor have they contained fresh blood. He has never vomited and never has been jaundiced. He denies syphilis. Physical examination showed at the time of entrance, an anemic, poorly nourished male, temperature 99.6°, pulse 80, respiration 20. The tonsils were negative, slight general glandular enlargement. Examination of the thorax was negative excepting for flatness on percussion, absent tactile fremitus and breath sounds below the fifth rib, left side. The abdomen was above the level of the ribs, larger over the left upper than the right. A large tender mass was palpated in the left upper ab-

domen, perfectly smooth and firm, with a rounded edge, which was notched on its upper margin. This mass extends from the left costal border to the left iliac crest and two fingerbreadths to the right of the medium line. The liver has palpated four fingerbreadths below the right costal margin. It has a perfectly smooth, sharp edge. There is dullness corresponding to the mass over the abdomen and extending to the fifth rib in the midaxillary line. On the 28th day of November the patient complained of severe pain in the upper left quadrant and a leathery friction rub was heard over this area at that time. Laboratory findings, including a Wassermann, were negative, excepting the blood, which showed on entrance 3,310,000 reds, 492,000 whites, 44 per cent. hemoglobin (Miescher). Differential count, 400 cells, showed 9 per cent. lymphocytes, transitionals 2 per cent., neutrophilic polymorphonuclear cells 24 per cent., eosinophiles 1 per cent, myelocytes 60 per cent., large numbers of normoblasts and an occasional megaloblast. On November 25, the patient was placed on one-half gram benzole combined with the same amount of olive oil four times a day. Blood examinations were made frequently and the benzole gradually increased, as will be seen in chart on next page.

On December 7, 1913, the spleen had receded about one fingerbreadth to the left of the median line. On September 16, 1914 the spleen was found to be about the same size as formerly. Examination Nov. 1, 1914 shows that the patient has gained in weight, is feeling well and has no complaints. His color is very good. The patient's friends tell him that he has never looked better in many years. There is flatness below the seventh rib extending down to within one and one-half fingerbreadths of the iliac crest. The spleen is palpated two and one-half fingerbreadths to the left of the umbilicus. There is a small ecchymotic spot over the right knee, which is possibly due to trauma.

On examining the above chart, the case shows a rise in the white count to 500,000 on December 30, 1913. After thirty-five days of treatment there is a sudden fall to less than one-half the above amount. From then on there is a very gradual decline to 23,000 on May 5, 1914. Following this a gradual rise of 373,000 on September 1, 1914, when the benzole was stopped and Roentgen rays began, and again the white count fell gradually to 58,000 on Nov. 2, 1914. During the treatment with the benzole and accompanying the decline of the white cells, there was a gradual decrease in the percentage of

DATE	RBC.	WBC.	HEMO. per cent.	MYEL. per cent.	REMARKS
11-23-'13	3,310,000	492,000	44	60	11-25-'13 Benzole gram. $\frac{1}{2}$ four times day.
11-28-'13	2,900,000	445,000	42	55.5	11-30-'13 Bladde's pills in ascending doses after method of Geo. Dock.
12- 3-'13	2,600,000	326,000	42	58	12-5-'13 Benzole grams. .75, three times a day.
12- 7-'13	2,800,000	318,000	47	45	12-7-'13 Benzole omitted. Out of stock.
12-10-'13	2,370,000	354,000	44	69	12-8-'13 Benzole begun again.
12-14-'13	2,070,000	394,000	47	69	12-11-'14 P. M. temp. 100° Benzole increased to one gram, 4 times daily.
12-17-'13	2,930,000	428,000	47	51.4	12-15-'14 Benzole grams 1.25, 4 times daily.
12-26-'13	3,400,000	424,000	53		12-19-'14 Discharged on ascending doses benzole, beginning 5 grams a day.
12-30-'13		500,000	52		
1- 6-'14	2,920,000	308,000	62	52	
1-14-'14	3,130,000	230,000	60		From June 15, 1914 to Sept. 1, 1914 patient was taking 12.5 grams per day.
1-20-'14	4,000,000	126,000	68		
2- 3-'14	4,500,000	95,000(?)	65(?)		
2-17-'14		160,000	70		
2-25-'14		115,000	70		
3- 3-'14		112,000			
3-10-'14		72,000	80		
3-17-'14		65,000	78		
3-24-'14		52,000			
3-31-'14		40,000	88		
4- 7-'14		35,000		28	
4-14-'14		33,000			
4-21-'14		25,800		42	
4-28-'14		29,000			
5- 5-'14		23,000			
5-19-'14		31,000			
6- 4-'14		33,000			
6-11-'14		60,000			
6-19-'14	4,150,000	120,000	80		
7- 3-'14		101,000			
7-31-'14		170,000			
8-14-'14		202,000	68		
8-21-'14		240,000			
9- 1-'14		373,000			
9- 3-'14		420,000			Benzole stopped X-Ray began.
9- 4-'14		385,000			
9- 7-'14		462,000			
9- 8-'14		481,000			
9- 9-'14	3,240,000	320,000			
9-11-'14	3,235,000	373,000	53		
9-14-'14		254,000			
9-15-'14		318,000(?)			
9-16-'14		256,000			
9-17-'14		278,000			
9-18-'14		238,000	57		
9-19-'14		246,000	57		
9-20-'14	3,280,000	246,000	57		
9-21-'14		242,000			
9-22-'14		210,000			
9-23-'14		214,000			
9-24-'14		204,000			
9-25-'14		161,000			
9-28-'14		170,000			
9-30-'14	3,920,000	182,000			
10- 2-'14		170,000			
10- 3-'14		180,000			
10- 4-'14		152,000			
10- 5-'14		142,000	65		
10- 6-'14		126,000			
10-10-'14		102,000			
10-14-'14		102,000			
10-17-'14		60,000			
10-21-'14		76,000	66		
10-23-'14		52,000			
10-28-'14		84,000			
11- 2-'14		58,000			
11- 5-'14	4,500,000	70,000	65		

The counts in this chart were made by several observers and where there were any discrepancies the findings were checked by same or another person, except where marked with question.

myelocytes and the size of the spleen. The myelocytes, however, have always been present throughout this observation, which has extended

over a period of eleven months. At no time has the patient complained of symptoms from the benzole. The hemoglobin and the red count

shows a corresponding improvement during the treatment.

This case conforms to the general run of such cases reported in the literature, in that there is a sharp rise of the beginning of treatment, following which, after about a month there is a sudden fall. Usually in cases with counts above 200,000, the fall is never more than two-thirds the original count. In cases below 200,000 the counts frequently reach normal or below and may remain there for several months. This case shows a gradual decline to 23,000, which is less than one-twentieth the original number. The count does not remain here, however, for there is a gradual rise to 373,000. We have no explanation to offer for this phenomena other than that probably the patient had developed an immunity to the benzole and would not react to further treatment.

A number of observers claim that benzole is very effective when given in conjunction with the X-Ray. We thought best to treat the patient with each separately until no further improvement was apparent and then to try them together.

In 1908 Dr. Barke (1) observed three cases of grave aplastic anemia with a striking leukopenia, apparently caused by exposure to crude benzole. Prompted by the observations on this series of cases, Dr. Selling (2) published experimental evidence to show that this drug had a powerful leukotoxic action. In 1912 Koranyi (3) influenced by the above reports used this drug with favorable results in cases of leukemia. Later his pupil, Kiralyfi (4) reported seven cases with good results; soon after this Stein (5) and Stern (6) report favorable cases following which Dr. Frank Billings (7) of Chicago, added five others, encouraging its further use. Following these reports and up to the present there are over fifty cases reported in the literature. However, not all reports are optimistic. Wachtel (8) mentions two cases where he had to stop benzole because of albuminuria. Koranyi (9), himself reports two failures with benzole, but here the Roentgen-ray also failed. Klemperer (10) and Hirschfield (10), regarded it as a dangerous remedy, because in their experiments it caused serious injury in animals. Two other observers (11 and 12) note that either coincident with or subsequent to benzole treatment, their cases took on an acute form and succumbed. Some observers comment on the lack of uniformity in the action of the drug; in all cases it reduces the white count, but not always to normal. In others it may reduce the

spleen to normal and have but little effect on the white cells. Pappenheim (13) found necrosis of the liver in rabbits given benzole. There had been a few cases reported of necrosis of the liver following this treatment in human beings. The most striking effects are seen in the myelogenous form of leukemia, while there is an occasional success reported of the lymphatic type, though the X-Ray seems to be more efficient in the latter disease. No cases have been reported where myelocytes entirely disappeared from the circulation, so apparently this remedy cannot be regarded as a specific. It is a remarkable drug, spectacular in its effects but deserving of a great deal of caution in its administration. This will restrict its use to hospital patients almost exclusively. Koranyi advises that the drug be stopped when the leucocytes reach 25,000. The permanency of the effects and the question of absolute cure, the future will have to settle.

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#### DISCUSSION.

DR. J. G. VAN ZWALUWENBURG: The X-Ray treatment of leukemia is well established, and, almost without exception, both the lymphatic and the myeloid type react promptly to its administration. It is very difficult, however, in a disease which naturally shows the exacerbations and remissions which all these leukemias present, to judge the exact effect of any remedy.

In general, the principle of giving the X-Ray treatment is to give enough to practically destroy the leucocytes and their progenitors; and in order to do this, a sufficient dose must be given. At the present time practically every one uses a ray as hard as possible to get into the depths of the splenic tissue and do as much damage as possible. For several years the treatment has been haphazard. Even

now there are two camps; the members of one believe in massive doses, the other camp believes in giving small doses every day with the idea of keeping the body constantly saturated to the point of intoxication. We have no means of measuring the amount of doses given, and the effects do not wear off for twenty-one days. It is therefore somewhat hazardous to give an underdose, and not a large dose at longer intervals, because a toxemia gradually develops. Treatment must be cautious and gradual until the patient gets used to it, until he gets the full dose.

Under these conditions leukemias show remissions of longer and shorter periods. I remember one case which we treated here repeatedly with X-Ray. He came back for four years. Ultimately the malady becomes refractory. In this case the white count went back to 4800, well below the normal before he was allowed to go home. Even then myelocytes were present. I think we may say that a normal differential is practically never reached. Recently I began using the Coolidge tube on this man, and by reason of our ignorance, he has probably been slightly underdosed for the past few weeks. I am now giving him a full dose from four ports of entry, three over the spleen and one over the liver, at two day intervals. That makes a session of twelve days and he goes home for a few days between times. I expect that he will improve still further, but I am just as confident that ultimately he will again relapse.

#### RESECTION OF THE GASSERIAN GANGLION FOR TRIFACIAL NEURALGIA COMPLICATED WITH FACIAL Palsy.

WALTER A. HOYT, B.S., M.D.

(From the Surgical Clinic, University Hospital).

The patient, Mrs. E. C., age 61, of Centralia, Ill. entered the University Hospital in the Neurologic Clinic on May 1, 1914, and was later transferred to the Surgical Clinic. The patient complained of pain in the left side of the face and paralysis on the same side.

*Family History.*—Patient's father died of blood poisoning at 39, and her mother died at 68 years of cancer of the face. Her four brothers are living and well and two sisters are dead, one dying of pneumonia and one of tuberculosis. There is no history of nervous or mental diseases in the family; no kidney trouble nor diabetes.

*Previous Medical History.*—Patient has had the usual children's diseases with good recovery. She has never had typhoid, pneumonia nor chronic cough. She has four children living and well, and two dead. There is no history of miscarriages, hemophilia, nor of venereal diseases.

*Present Trouble.*—For the past four or five

years the patient has had slight attacks of pain in the head and face. Two years ago she had her teeth removed, because they were decaying and apparently causing pain. A short time following this she had a sharp pain in the left lower jaw, and this recurred two or three months later. In August, 1913, the patient began having very severe paroxysms of pain especially in the lower distribution of the fifth nerve, requiring morphine for relief. The pains grew worse and more frequent, and in December, 1913, she had the nerve of that side injected. She had six injections in all, given below the zygoma, and following the last injection she developed a facial palsy. After one of these injections the patient had relief from pain for three days. The patient is unable to eat, cannot swallow well, and articulates very poorly. She has lost sixty pounds since last August. The patient has more or less constant pain especially in the lower branch of the trifacial, and slight paroxysms are brought on by eating or by anything that touches the face. If a paroxysm develops while eating she is unable to swallow. The pain is very severe and can only be relieved by hypodermic injections of morphine. Because of the long duration of the pain and its severity the patient has on several occasions threatened suicide.

*Neurologic Examination.*—There is practically complete left facial palsy. She cannot elevate the left eyebrow, cannot close the left eye, and cannot draw back the left corner of the mouth. The extraocular movements are normal, and there is no nystagmus. The pupils are equal, react to light and in accommodation. There is no difference in sensation of light touch or pin point on the left side of the face; no anesthesia; no atrophy or deformity of the tongue; no marked stigmata of degeneration and no atrophy or deformity of the hands. The biceps reflexes are present, equal and about normal. The triceps reflexes are present, equal and normal. The knee likewise; the Achilles jerks are prompt, equal and normal. She says she has had no numbness in her feet and gait and station are normal with eyes open or closed.

Urine examination showed specific gravity 1020, reaction acid, albumen and glucose negative, sediment negative except for a large number of amorphous urates.

Blood examination showed red blood cells, 4,900,000, white blood cells 7,800, hemoglobin 90 per cent.

The patient was referred to Dr. Canfield who

found the otologic examination negative. X-Ray examinations made by Dr. Van Zwaluwenberg were also negative. Wassermann examination on the blood was negative.

A diagnosis of trifacial neuralgia affecting the second and third division was made, and the patient was operated May 6, 1914 in the Surgical Clinic by Dr. De Nancrède for removal of the Gasserian ganglion. The so-called Hutchinson method of exposure was carried out. An oval musculocutaneous flap was reflected having the base at the zygoma and its upper end one and one-half inches above, its posterior border running toward the condyle of the lower jaw. The fascia of the temporal muscle was incised and about three-fourths of an inch of the zygoma was resected between the external auditory meatus and the external angular process of the frontal bone. The opening was then enlarged as far as the infratemporal crest, at this point the middle meningeal artery being ligated. The dura was then detached from the floor of the middle fossa and the brain retracted with spoon retractors. This exposed the ganglion and the inferior and superior maxillary divisions, passing out through the foramina, rotundum, and ovale. The dura covering the ganglion was incised and ligatures passed around the second and third divisions at either exit. These two roots were then cut across and with mouth tooth forceps and narrow bladed knife the outer two-thirds of the ganglion was removed leaving the ophthalmic branch and the inner third. Considerable hemorrhage was encountered when the ganglion was disturbed. This was controlled effectually by small sponges and tampons applied firmly over the ganglion. A small cigarette drain was placed in the wound and the wound closed with catgut and horsehair. The operation lasted about two hours. Ether anesthesia was administered and the patient reacted well and showed no signs of shock. Following operation a watch glass was held in place by adhesive over the left eye, and the eye washed three times daily. The cigarette drain was removed on the second day, and the wound found to have healed by first intention except one small area where a little sloughing of the skin took place. The patient was discharged from the Hospital on May 24, 1914, eighteen days after operation.

*Examination Following Operation.*—Immediately following operation, the patient complained of pain in the left side of the face and posterior to the ear. This, however, was only of twenty-four hours' duration. Neurologic

examination ten days following operation showed that the patient had no pain and could talk and laugh. She complained that the only abnormal feeling was a slight numbness in the left side of the face. She still had complete left facial palsy and the left side of the forehead was a little wrinkled and she could not close the left eye. She drew back the left corner of the mouth slightly better than the right, both voluntarily and in smiling. The tongue protruded in a straight line; there was no tremor, no atrophy, and no difference in the two sides. There was a slight numbness in the left side of the tongue, and sometimes water would drool from the left corner of the mouth, but she did not feel it. The left masseter, and the left temporal could not be felt to contract. The left side of the tongue was analgesic and also anesthetic, while the gum on the left side of the mouth was analgesic to pin point both above and below. The analgesia extended back to the anterior pillar, but could not be definitely determined beyond this. When the patient opened the mouth very widely the lower jaw deviated to the left. Sense of taste was preserved for "sweet and sour," and she said these substances were felt on both sides of the tongue equally, except that "sour" stung more on the right side.

Anesthesia to light touch was found extending from the median line laterally for about two and one-half inches and reaching from the lower border of the orbit to the angle of the jaw. Anesthesia to light touch and analgesia to pin point were present only on the upper lip. In other parts of the face sensation was equal on the two sides.

The ganglion was examined by Dr. Warthin with the following report: "A ganglion showing atrophy and chromatolysis of some of the ganglion cells, calcareous concretions and an interstitial increase of the nuclei."

The patient was examined by her home physician a few days ago and he states she is happy and entirely free from pain. She has gained thirty pounds in weight and can eat as well as she ever could. The facial paralysis has not changed and no keratitis has developed. Sensation is present over practically the whole left side of the face and there is very little deformity.

This case is of especial interest because of the complication with facial nerve paralysis of the same side. One of the complications of this operation is a keratitis especially where the ophthalmic branch is resected with the other

two divisions. With the patient unable to close the eye because of a facial paralysis, such a complication would almost invariably follow. It was mainly for this reason that the Hutchinson operation was decided upon. Where symptoms are present only from the two lower branches it is not necessary to disturb the ophthalmic branch, and thereby endanger the patient with keratitis. In operations removing the entire ganglion, the mortality is greater and the danger of damaging the cavernous sinus and the third, fourth and fifth nerves is greatly increased. Likewise the hemorrhage is less in the Hutchinson operation and the possibility of a two stage operation is lessened.

It is also very interesting to note in this case the rather small area of cutaneous anesthesia. With the cutting of the second and third divisions of the trigeminal nerve cutaneous anesthesia would be expected to extend from the median line to the ear laterally, and from the angle of the jaw to the orbit above. As has been shown in this case the area of anesthesia was not over two by two and one-half inches in diameter. This I find has been true in most of the cases reported. Zander showed some years ago that the distribution of the cervical and the trigeminal nerves overlap one another for a considerable distance. The return of sensation in this case and other cases must be accounted for by the presence of the cervical nerves rather than by any re-establishment of the trigeminal tract. Otherwise we would find also recurrence of pain which in this and other cases does not take place.

The pathogenesis of trigeminal neuralgia has not as yet been definitely worked out. Many ganglia removed from genuine major neuralgia have been examined in which demonstrable lesions of the ganglion or its divisions have been conspicuous by their absence. On the other hand, Cominiti has shown certain cellular changes in the ganglion of patients suffering from the *douloureux*; but the same change was found in cases where *tic douloureux* did not exist. As far as I can ascertain no definite pathology has been shown. The disease may be of central origin, that is, from a lesion in the ganglion, in the sensory root, or the ganglion may be involved primarily or secondarily to diseases of the peripheral branches. It remains for a lesion either peripheral or central to be found, a lesion which is both constant and characteristic in all cases before any definite conclusions can be drawn.

#### DISCUSSION.

DR. C. B. DE NANCREDE: I need not add anything to the discussion except to say that this case manifests the advantages of doing no more than is absolutely necessary, i. e., not removing the whole ganglion in every case. In certain respects the Hutchinson operation is more difficult than the removal of the whole ganglion, although some of the hemorrhage resulting from loosening this is lessened, and there is less chance of damaging the cavernous sinus and the ocular nerves. If ready access could be had to the ganglion intracranial operations on the ganglion or its branches could and should be done early, provided damage to the ophthalmic branch can be avoided, as is possible by the Hutchinson operation. Although the essentials of the intracranial work could be carried on probably in from five to ten minutes, if the operation were an external one, the inaccessibility, the circumscribed space rapidly filling with blood, necessitates repeated temporary tamponing and often excessively prolongs the procedure. Patience will usually overcome this difficulty aided by tying the middle meningeal artery; but even then the most skillful surgeons occasionally are compelled to temporarily abandon the operation either from serious loss of blood or its prolongation of the operation with the necessary manipulation of the brain causing shock. Tamponing with closure of the wound, the actual removal of the ganglion being made a few days later, after reopening the wound, then becomes a necessary procedure. This was done in one case in our clinic, where a colleague had to abandon the completion of the operation in one stage. A section of the sensory route is an easier operation than the one we adopted, but the sensation of the eye being lost, and the eyelids in our patient remaining permanently open, the chances of destruction of the eye were especially great.

#### THE VALUE OF THE TWO STAGE OPERATION FOR SENILE HYPERTROPHY OF THE PROSTATE.

HARRY H. M. MALEJAN, M.D.

(From the Genito-Urinary Clinic, University Hospital).

I wish to present tonight a few facts concerning the value of the double stage operation for senile hypertrophy of the prostate, and the advantage of the same over the one stage transvesical prostatectomy.

The retention of urine has marked effects on the renal and cardiovascular system, the most striking symptoms being loss of sleep, anorexia, general depression, loss of weight, constipation and high blood pressure. The patient may suffer from uremic poisoning, even though he passes 3000-3500 cubic centimeters of urine daily, the specific gravity being very low. The bladder undergoes marked change. Its wall may be hypertrophied and trabeculated, later losing its tone. There is a peculiar balance existing between the heart, kidneys, secretion of urine, and

their nervous control in the patient who has gradually become used to overdilatation of the bladder.

In such a case, where the patient has a blood pressure of 200 millimeters mercury, or higher; a urinary output of 3000 cubic centimeters or more, of low specific gravity, with fair phthalein content; no albumin nor trace of the same in the urine, upon the performance of suprapubic cystotomy under local, or general anesthesia, the patient, on or about the third day thereafter, begins to feel sick, showing slight symptoms of uremia. The urinary output is diminished to 500 or 750 cubic centimeters. The phthalein content drops to 15 or 20 per cent. and the urine boils solid with albumin. The blood pressure, however, being a trifle lower than before the operation, proves the peculiar balance existing in the nervous control of secretion of urine, kidneys and heart. Cystotomy alone brings about the disturbance of this balance, the condition lasting five or six days, after which the patient begins to improve generally. There is a more copious secretion of urine; the phthalein output is increased; less albumin occurs in the urine; and the blood pressure becomes still lower.

The foregoing changes are seen after simple suprapubic drainage of the bladder without loss of blood, or shock. If one adds to the above condition, the loss of blood, prolonged manipulation, and the shock attendant upon removal of the prostate, it is not remarkable that the mortality on the third or fourth day after such operations is high without apparent cause.

In view of these facts the double stage operation should be advocated in many cases of hypertrophied prostate, as being safer, and enabling the patient to stand the operation where, in many instances, he could not survive the one stage prostatectomy.

The following procedure is carried out in the double stage operation:

The patient is prepared in the usual manner, under local, or nitrous oxide anesthesia. The recti muscles are separated just above the symphysis pubis. The peritoneum is then stripped back and the bladder opened and drained. Several days following the first operation, the prostate gland is enucleated through the same incision.

The one stage operation is justified when there is no infection of the urinary system, where the blood pressure is low, when there is not much retention of urine, where the patient is well nourished and in good general condition,

and in cases where an indwelling catheter is employed for a few days subsequent to operation to relieve retention. The phthalein output is over 40 per cent.

The double stage operation is indicated in the following cases:

Cystotomy must be first performed:

1. When the patient has cystitis, orchitis, pyelitis with daily chills and fever, anorexia, irregular pulse, or marked depression.
2. When the bladder is enormously distended with urine and blood clots.
3. When the patient has a constitutional disease, such as diabetes, nephritis, tuberculosis, cardiovascular diseases, high blood pressure, mitral and tricuspid insufficiency, or stenosis.
4. When the patient is toxic from septic absorption or renal insufficiency.
5. When the patient cannot stand the indwelling catheter.
6. In the case of multiple degenerations incident to senility.
7. In cases of profound general depression resulting from prolonged suffering, loss of sleep, or general debility.

The following case is presented as being unusual on account of the patient's advanced age and general debility due to senility.

Dr. Loree at first declined to operate, but the patient insisted upon an operation, expressing his desire to be either "killed or cured."

H. J. B. age 81, occupation, retired farmer.

*Complaint.*—Retention of urine, and inability to urinate.

*Family History.*—Father died at 75 years of age. Mother died of paralysis at about the age of 70. Two sisters living, one 75 years and one 90 years of age. Two brothers and two sisters died of unknown causes. No tuberculosis nor chronic heart trouble in the family. No kidney trouble to patient's knowledge.

*Personal History.*—Had "typhoid malaria" at 50 years of age. Married fifty-eight years. Has one daughter, 56 years of age, who has trouble with lungs. Patient denies venereal disease. Chronic diarrhea for many years. This suddenly stopped, and has had chronic constipation ever since.

*Present Illness.*—About thirty years ago patient had retention, and was unable to pass urine on the start, and had often been slow to start for many years. This did not bother him until about five years ago in March, when he had to get up about forty times during the night. Urination was painful. About five years ago, after using a patent preparation for

urinary trouble he had retention. Called a doctor who passed a catheter and washed the bladder. He was sleepless and had pain in the bladder region. Bladder felt full and could not be entirely emptied. As a result of this latter condition, the patient, about four years ago, went to a hospital at Angola, Indiana where he spent ten weeks. Was treated by washing his bladder. Went to the Angola hospital a second time, remaining three weeks. Later he took osteopathic treatments which consisted of kneading his back. About three years ago he began to use a catheter, and has used one ever since.

The patient was examined August 11, 1914 by Dr. Hoyt. Diagnosis: Hypertrophied prostate with complete retention. Urine showed a moderate amount of albumin with many casts. The patient entered the Hospital September 18, 1914 with normal temperature, pulse and respiration. By the insertion of a permanent catheter, the urine cleared of albumin and casts. The phthalein output was 25 per cent. the first hour, and 10 per cent. the second hour.

On September 22, 1914, under drop ether anesthesia, transvesical cystotomy was performed by Dr. Loree. The patient reacted well. From the third to the eighth day after the operation he was very weak, uncomfortable, and had considerable pain. The amount of urine was diminished. The phthalein test was

tried twice but the percentage could not be estimated due to loss of urine through the dressings. After the eighth day the patient stated that he felt like himself again. He was up in a chair most of the time following the operation. On the nineteenth day after the first operation, the prostate gland was enucleated through the cystotomy opening under nitrous oxide anesthesia, the time of the operation being one and one-half to two minutes. The gland after removal was about the size of a lemon, soft, and irregular in outline. Pathologic report was cystic glandular hyperplasia. The bladder was packed with gauze and a drainage tube inserted.

Following enucleation of the prostate, the patient did not develop high temperature, the only notable result being severe pain during the first twenty-four hours due to the packing. The patient was up in a chair the fifth day, and began to pass urine through the natural channel on the eighth day. On and after the fifteenth day all urine was passed per urethram. The suprapubic wound closed and the patient made an uneventful recovery.

#### DISCUSSION.

DR. DEAN LOREE: Besides the double stage operation as mentioned by Dr. Malejan, I would place much emphasis upon the functional test of the kidneys, and nitrous oxide anesthesia. These three combined go far toward the success of the operation in a man of this age.

*The Action of Iodids on Blood Vessels and Heart.*—The iodids, especially potassium iodid, have been credited with having a blood-pressure lowering action and have been used extensively in the treatment of arteriosclerosis. D. I. Macht has demonstrated that the iodid ion, instead of depressing the heart and vessels, has a marked stimulating action and that if potassium iodid lowers blood-pressure it must be the effect of the potassium part of the compound (*Jour. A.M.A.*, Nov. 14, 1914, p. 1767).

*Asepticones.*—Asepticones, sold by the Chinosol Company, are vaginal suppositories stated to contain salicylic acid, boric acid, quinine and chinosol. On the basis of the evidence submitted the Council on Pharmacy and Chemistry voted that asepticones be refused recognition because unwarranted and misleading therapeutic claims are made; because the name does not indicate the potent constituents and because it was considered an unscientific shot-gun mixture (*Jour. A.M.A.*, Nov. 14, 1914, p. 1778).

*Bacillicide.*—Bacillicide, sold by the Prophitol Products Company, Richmond, Va., is an unscientific solution of the Glyco-Thymoline type. It was refused recognition by the Council on Pharmacy and Chemistry because its composition is secret, because

unwarranted and exaggerated claims are made for it and because the use of complex mixtures of uncertain composition is unscientific and contrary to the best interests of the public (*Jour. A.M.A.*, Nov. 14, 1914, p. 1778).

*Serum Vaccine, Bruschetti.*—This vaccine, sold by R. G. Berlingieri, New York, has for its aim the destruction of the tubercular cell and the facilitation of its elimination by the natural expulsive processes. The manufacturer not having submitted proof of the value of the preparation, the Council on Pharmacy and Chemistry voted that it be refused recognition. Later, information was received that the preparation was now used only in slight cases (*Jour. A.M.A.*, Nov. 14, 1914, p. 1870).

*Lysoform.*—Lysoform and Crude Lysoform, made by the Lysoform Gesellschaft, Berlin, Germany, are solutions of potash-soap stated to contain respectively 6-7 and 10 per cent. of formaldehyde. These preparations were refused recognition by the Council on Pharmacy and Chemistry because unwarranted claims were made in regard to their efficiency and because their indiscriminate use for the treatment of diseases was recommended (*Jour. A.M.A.*, Nov. 21, 1914, p. 1870).

## The Detroit Society of Neurology and Psychiatry

C. W. HITCHCOCK, Detroit, President  
GUY L. CONNOR, Detroit, Secretary

The regular meeting of this Society was held at the Medical Club, Detroit, on December 3, 1914 with the President, Charles W. Hitchcock in the chair. There were twenty members present.

The minutes of the last (annual) meeting were read and approved.

Doctor Robert H. Haskell, of Ann Arbor, and Doctor Heinrich Reye, of Pontiac, were elected to active membership.

### CASE REPORTS.

A CASE OF MULTIPLE SCLEROSIS, DR. C. W. HITCHCOCK: L. A. age 49, a peddler, married and the father of eight healthy children; born in Austria, was admitted to Harper Hospital, Nov. 20, 1914, complaining of weakness and an annoying tremor of the left hand and arm.

*History.*—The family history is meager and negative so far as known. His personal history brings out that he has never been sick and denies any venereal infection, that he uses no alcohol and has not smoked for the last five months, though earlier a heavy smoker.

His present illness began five or six months ago in a weakness of the left arm, followed by slight tremor which gradually increased and has been followed in the last four weeks by some pain in the arm. Has lately complained of frequency in urination. About five or six weeks ago he noticed a feeling of weakness and tremor in the left leg and two days before admission to the hospital began to have some tremor in the right arm. Since the onset of his trouble he has had frequent attacks of dizziness, palpitation and headache, and reports a loss of about twenty-five pounds in weight, no cough and no expectoration. Appetite has been good, elimination excellent; there has been no nausea, vomiting or abdominal pain. Of late, he has noted tremulousness of speech.

*Examination.*—Heart and lungs are negative, as also abdomen. He appears fairly well-nourished, takes on standing a rather relaxed position. When alone and at rest, but little or no tremor is manifest and if at all present is limited to the left hand and arm. This is at once increased by the presence of strangers, attention drawn to him or any emotional influence. It is tremendously exaggerated by any intentional effort, particularly of the left hand. He cannot convey to his mouth a full glass of water. The "intention" character of the tremor seems well demonstrated. Speech, he freely admits, is somewhat affected. He notices it as "shaky" in character. It is not typically scanning in type.

The pupillary reflex is normal, the fields of vision also, the media are clear. The fundus shows changes in vascular supply, arteries small, nerve head pale, veins irregular and fatigued, changes arterio-sclerotic in character. Edges of the disc are clear and well-defined.

There is no neuritis, no exudates, no hemorrhages. On careful inspection and repeated examination there seems to be some nystagmus present.

The Romberg symptom is well marked. The abdominal reflexes are absent, the cremasteric but slightly in evidence. The knee jerks are exaggerated, the left enormously so, its elicitation even provoking a contra-lateral response. There is bilateral ankle clonus.

No satisfactory Babinski, Oppenheim or Gordon is elicited.

*Sensory.*—There is some impairment of pain sense and temperature sense more especially in the right leg. There is no anesthesia or analgesia.

The Wassermann is negative.

Stereognostic sense is not impaired.

His signature is not tremulous.

*Motor.*—The gait is weak and shuffling, with a tendency to drag slightly the left foot. Attempts to walk backward or forward with eyes closed develops much ataxia. Attempts to use either hand with eyes closed greatly develops the tremor in each. His legs are somewhat spastic.

*Diagnosis.*—The case is by no means typical yet seems to answer best to the diagnosis of a multiple sclerosis.

Discussed by Doctors Inglis, Barrett and Hitchcock.

### AN UNUSUAL CASE OF TABES DORSALIS WITH AN UNUSUAL THERAPEUTIC RESULT—

DR. THEOPHIL KLINGMANN,  
ANN ARBOR.

*History.*—The patient a laborer of robust physique, 49 years of age, was admitted to the out patient department of the Neurological service in the University Hospital, on August 25, 1914.

He complained of numbness in the hands and feet, inability to stand or walk and pain in the legs.

In the reference to the family history he relates that his father died of asthma at the age of 63 and his mother at 64 of unknown cause. He has two brothers, both are well and one sister who died in childbirth.

The patient states he has had typhoid fever three times, malaria fever twice and two attacks of lung fever. He denies having had syphilis or gonorrhea.

Years ago he had a papular eruption all over the body which was of short duration and disappeared spontaneously. He has no children, his wife is insane (maniac—depressive insanity).

The present illness began two months before he applied for treatment at the clinic. He first noticed numbness in the hands and feet with continuous pain in the posterior part of the legs and pain in the neck. His appetite is not good but he has had no pain in the stomach region.

*Examination.*—The neurological examination at this time revealed that his pupils were equal and round but reaction to light was sluggish and rather slow in accommodation. The extraocular movements were normal, the facial expression was not peculiar and there was no facial palsy. The tongue was protruded straight without a tremor and there was no tremor of the lips. The grip of both hands was the same but not strong, there was no tremor or inco-ordination of the hands. He could not feel pin point over the dorsum of the hands and forearms. His station was normal with the eyes open but swayed considerable when standing with the eyes closed. There was no weakness in the lower extremities but carried the lower limbs rather rigidly in walking but no ataxia was apparent. There was an area of hyperesthesia over the outer third of the dorsum of the right foot, but otherwise there was no objective disturbance in sensation in the feet or legs.

The biceps and triceps reflexes were not obtained and the knee and Achilles jerks were lost. The plantar reflexes were normal on both sides, so were the cremasteric and umbilical reflexes. There was no disturbance of the function of the bladder. No treatment was prescribed at this time as he did not remain for a complete examination; but returned to the clinic and was admitted to the ward on September 14, 1914. In the meantime he had attempted to do hard work but soon noticed a rapidly progressive weakness in the extremities, with marked difficulty in standing and walking, and he could not always tell if his feet were on the floor. He also complained of stinging pain in the legs and about the chest. At this time he presented a markedly different clinical picture. He was unable to stand or walk without aid and there was a marked ataxia in the hands and feet. The pupils were small and the reaction to light was very sluggish, more prompt in accommodation. The extraocular muscles were normal, there was no facial palsy but a marked tremor of the lips and tongue. The elbow-jerks were absent also the knee—and Achilles—jerks on both sides. Plantar irritation caused plantar flexion of the toes of both feet. There was loss of the sense position and motion of the feet and loss of the sense position of the hands.

The general physical examination revealed nothing of importance, the urine examination gave a negative result.

The blood serum and spinal fluid gave a negative Wassermann reaction. There was no disturbance after the puncture, such as headache, nausea and vomiting. He left the Hospital on the twenty-second day. During his stay in the Hospital he received eighteen intramuscular injections of one-fifth grain of succinamide of mercury. During the first part of the treatment, beginning on the fourth day after admission, the patient complained of severe pain

around the areas of injection and severe headache with nausea and vomiting.

This continued for ten days, about this time he began to show improvement which was evident in all of his movements, the sensory disturbances of the legs and feet disappeared promptly and the patient was able to walk with the aid of crutches. The improvement progressed steadily and he was soon able to walk without aid. Before leaving the Hospital, on the fifth day of October, he could stand without support and could walk with the aid of a cane and since this time he has improved so markedly that he has been able to go hunting on four different occasions and was able to bring down the game. For the past three or four weeks he has walked to and from the Hospital, a distance of something over a mile.

On November 30 the neurological examination was as follows: The patient's pupils are equal; they react slowly to light but equally well, they react promptly in accommodation. There is no extraocular palsy. The tongue is protruded straight, without a tremor. There is no tremor of the lips, no inco-ordination or tremor of the hands. He walks without difficulty and shows but a slight ataxia in both feet. In standing with the eyes closed, he sways slightly. Station is normal with the eyes open. There is no objective disturbance of sensation of any form anywhere, the plantar reflex is normal on both sides. He says he has occasional stinging pains in the feet but to a much less degree than before the treatment.

*Comment.*—The case is an unusual one because of its rapid development, showing a very active process in the central nervous system with negative laboratory findings, both the blood serum and the spinal fluid giving a negative Wassermann reaction. The cases in which the Wassermann test on the spinal fluid is sometimes negative (about 3 per cent.) are cases of long standing and of very slow progress. The Wassermann test on the blood serum is more often negative in tabes (about 20 per cent.) than in any other form of syphilis of the central nervous system.

The case just described was undoubtedly in the earliest stages of development, even though the symptoms were well marked and accordingly the therapeutic result came very promptly with almost complete disappearance of the most distressing symptoms.

From my own observations and investigation of the work of others, I dare say that the method of treatment employed in the case just reported gives results equally as good, if not better than with Salvarsan in tabes or paresis.

Discussed by Doctors Inglis, Camp, Christian and Klingmann.

A CASE OF SYPHILIS IN PRIMARY STAGE WITH INVOLVEMENT OF THE CENTRAL NERVOUS SYSTEM—DR. UDO J. WILE, ANN ARBOR.

It is generally accepted by most authorities that following the appearance of the syphilitic chancre there is a period longer or shorter during which the infection remains local before

there is a hematogenous dissemination of the spirochaeta. This period is known as the stage of secondary incubation. In the case I am about to report, the onset of the involvement of the nervous system, as evidenced by the findings in the spinal fluid, occurred so short a time after the appearance of the chancre, before any other secondary manifestations were present, that one is inclined to believe that in certain cases at least this period of secondary incubation does not exist, or is not measurable.

The patient is a man of 38, married and was admitted to the University Hospital on the 22nd of October, 1914.

*Complaint.*—Comes to the Hospital for a sore on the penis.

*Family History.*—Is negative.

*Past History.*—Patient has been married and has a family of six children, all of whom are healthy. He has been divorced from his wife. He is a heavy drinker.

*Present Trouble.*—Four weeks ago the patient developed a small sore on the outside of the foreskin, two or three weeks postcoitu. This gradually increased in size but did not become hard. Another lesion however appeared inside the foreskin near the frenum. This rapidly developed an induration. The patient burned both lesions when they were fully developed. They have caused him very little pain. He has had no trouble with headaches or a general eruption.

*Examination.* *Dr. Stokes, Oct. 23, 1914.*—Patient is a seedy, undernourished, dissipated looking individual. Eyes: Pupils are equal and react to 1 and a. The face shows an alcoholic flush. There is no alopecia. The skin of the body is clean. The lesion of which the patient complains is on the penis, which shows complete phimosis and considerable swelling. On the outer surface of the prepuce is a small, irregular ulceration with a yellowish dirty base. The tissues surrounding this ulcer are infiltrated. The infiltration is almost boardlike near the frenum. It is impossible to avert the foreskin sufficiently to see the actual lesion.

*Mucous Membranes.*—There is considerable pharyngeal engorgement but no definite lesions.

*Glandular System.*—There is a marked bilateral, painless, inguinal adenopathy. The patient could not remain long enough for dark field examination at this time.

*Dr. Stokes, Oct. 23, 1914.*—There is a pipistem lymphadenitis, painless to the touch, on the dorsum of the penis.

*Dr. Stokes, Oct. 24, 1914.*—Aspiration of the base of the chancre on the foreskin with a hypodermic syringe yielded serum containing large numbers of spirochaeta pallida.

*Neurological Examination.*—The neurological examination of this case carried out in Dr. Camp's clinic showed exaggerated knee and Achilles jerks, sluggish and unequal pupils, and an unsteady station, particularly with the eyes closed. Examination of

the eighth nerve by Dr. Canfield was returned as showing involvement with decreased bone conduction. From Dr. Parker the report is neuro-retinitis with marked vascular changes of the sclerotic type in both eyes. The lumbar puncture showed a cell count of 200, Nonne Apelt positive in a dilution of one to four and albumen plus minus increased. The Wassermann on the spinal fluid was found to be negative.

This case is extremely interesting in view of the early involvement of the cerebro spinal axis both clinically and from the examinations of the spinal fluid. The negative reaction of the spinal fluid is quite in accord with my findings in secondary syphilis, where clinical manifestations may be associated with any one of the three changes of the cerebro spinal fluid. Patient is to return in a short time for re-examination. The presence of central nervous system involvement in this case before even a general adenopathy was present and before any secondary manifestations occurred, leads one to the inevitable belief that the hematogenous spread of the disease from the primary sore occurs a considerable time before local metastatic foci appear in the skin or mucous membrane.

Discussed by Doctors Camp, Christian and Wile.

A CLINICAL AND ANATOMICAL STUDY OF A CASE  
OF DEMENTIA PRAECOX, ILLUSTRATED  
WITH LANTERN SLIDES—DR. A.  
M. BARRETT, ANN ARBOR.

The patient was a male who came of a family in which the father was eccentric and several members were peculiar but not insane and one brother had physical malformations. At the age of 5 he had poliomyelitis, which left a mild degree of paralysis in the left foot. He was of average intelligence in the schools and learned the business of a pharmacist but never was more than ordinarily successful. He had been married 18 years, but had no children. Since 36 he had been a periodic drinker. Since 41 he had taken less interest in his business. At 43 he was guilty of an indecent exposure. During the past year he had had numerous schemes for making money. He entered into financial obligations without any ability to keep them. He accused his wife of infidelity and became much interested in books dealing with "New Thought" and occult sciences. On the occasion of the death of his father he acted strange. As he left the town after the funeral he felt that incidents about the station and on the cars had some reference to himself. As he tried to walk on the street he acted peculiarly and was arrested under the suspicion that he was drunk. In the station house he became much excited, screamed and assaulted those around him. The events following this he later looked at as if they had some peculiar significance for himself and that forces outside of him were

controlling his actions and directing the experience he was going through.

A few days after this he came to the State Psychopathic Hospital. The physical examination showed a mild atrophic paralysis of the left lower leg and foot. Blood pressure was 136; irregular pupils but normal reaction. Knee and arm reflexes were present but the Achilles were not obtained. The blood showed a leucocytosis of 16,150 cells. Four Wassermann tests of the blood and one on the cerebro-spinal fluid gave negative results. The examination of the fluid gave from five to seven cells per cubic millimeter and albumen of two division of the Nissl-Esbach tubes. The Nonne-Apelt reaction was negative. During the first four days he refused to talk. His movements were for the greater part of this time stereotyped, or at times he was cataleptic. At other times he was completely resistive to all external influences, even doing the opposite of what he was required to do. On the fifth day he talked freely, showed a clear memory for all that had happened and gave a long detail account of his experiences, which were interpreted to mean that all that had happened was part of a definite scheme of events centering around his own important personality. During the next week there was much stereotypedness in his movements; occasionally he acted impulsively, being compelled by "Some Higher Power." He then entered upon a phase in which he orated much in dramatic tones, speaking of himself as, "I am the only Jesus Christ that ever lived and my father J. L., is God Almighty." The patients about him were given other identities, and the greater part of his talk concerned his transformed identity and the reworking of all his past experiences in a way to show how all had a part in the scheme culminating at this time. He stood in peculiar positions with arms outstretched like a cross. At times there were evidences of ambivalence, as, "Should he or should he not replace the rugs he had taken from the floor." After a few days of this talkative period he became mute and negativistic. For a period of one day he showed echolalia. He again became noisy and talkative. The content of his thought concerned his personality and he elaborated a wealth of expansive ideas relating to changes in his environment. He wrote numerous letters full of allusions to himself and references to scriptures and their bearing upon his wonderful experiences.

In these letters there were often interspersed abbreviations, puns and unusual expressions. It was easy at times, to induce flights of ideas by stimulus words and in a long series of association tests there were numerous reaction with words of religious significance.

About April 14 there were occasional episodes of depression in which he kept by himself and cried much. A letter written about this time he signed "George Washington L." Periods of depression were from this time on, frequent but there were also times when he was extremely boisterous in his talk

and showed many stereotyped attitudes. About April 22 there were periods when he was stuporous and indifferent to all going on near him. This might suddenly be interrupted by impulsive acts, assumption of stereotyped attitudes or an outburst of speech full of words strung together without any adequate connections.

He was physically weak. There were frequent loose bowel movements. His temperature varied between 94.6 and 96.0. The leucocytes numbered 20,350. On April 26 he continued to fail. He was clear in his comprehension; at times he would converse seriously and with orderly thought but his speech showed many words striking in their contrast with the situation he was in. This strange conduct with at times outbursts of excitement continued until his death a few hours later.

In the clinical course of this case the development of the symptoms was of unusual interest. The disorder began with a catatonic excitement, with physical disturbances of cyanosis, leucocytosis, and slight rise in temperature. As the catatonic features became less marked the physical condition improved. There occurred a marked gain in weight and the sleep was more normal. From out of the catatonic state there arose a paranoid state with delusions determined by the affective influence of complexes which were derived from the memories and experiences of a peculiar personality, and the events of the death of his father. These led to a complete change of personality with expansive delusions which became loosely arranged and absurd, and finally terminated in a catatonic stupor with physical symptoms of leucocytosis, subnormal temperature, nephritis, diarrhea and lost tendon reflexes.

The pathological findings of the autopsy were a small pneumonic focus in one lung, chronic passive congestion of all organs, fatty atrophy of the heart, marked syphilitic aortitis, syphilitic orchitis with marked atrophy of the testicles. These findings did not seem adequate to account for the sudden death of the patient and were in part the result of some pathological process which also showed its effects upon the structure of the central nervous system.

The study of the brain showed no gross lesions which could account for his death. Aside from arteriosclerotic thickenings of some of the larger vessels there were no certain abnormalities.

Microscopic examination showed widespread and severe fatty pigmentation of the nerve cells and marked accumulations of fat in the neuroglia and in the blood vessel walls. There were no ameboid changes in the neuroglia. The process within the cortex was unquestionably a severe structural change and one which has occasionally been described in deaths from acute dementia praecox. It would seem that the excessive amounts of fat within the nerve cells must have seriously interfered with the healthy functioning of the cells, and that the changes in the brain might be looked upon not as specific for dementia praecox but as part of a general patho-

logical process showing itself in certain changes in the body organs, such as the fatty degeneration of most and the chronic nephritic changes. This process had allowed the schizophrenic process to develop from tendencies which were latent before the development of the acute symptoms.

The reader reviewed some of the recent contributions dealing with the organic features of dementia praecox and called attention to the physical abnormalities which were present in this case as indicating an organic process associated with the mental symptoms of dementia praecox. These symptoms were, the acute onset with rise in temperature, vasomotor changes, and the leucocytosis which was present during the more restless phase of the course; then,

with the development of the delusions the acute symptoms passed away and a marked gain in weight occurred. The condition terminated in the acute phase with leucocytosis, nephritis and lost tendon reflexes of the legs.

Discussed by Doctors Hitchcock, Amberg, Christian, Klingmann and Barrett.

Secretary announced that Dr. Warnshuis, Editor of the *Journal of the Michigan State Medical Society* would publish the Transactions of Detroit Society of Neurology and Psychiatry.

The Society then adjourned.

GUY L. CONNOR, Secretary.

*Maignen Antiseptic Powder.*—This powder, exploited by the Maignen Institute, Philadelphia, is stated to be composed of calcium hydroxid, sodium carbonate, aluminum sulphate and boric acid and its action depends on the sodium hydroxid which forms when the powder is treated with water. It is advertised both to physicians and the public by means of claims which are extravagant, preposterous and dangerous. Thus a pamphlet gives directions for the sterilization of the nose, throat, stomach, lungs, eyes, gums, mouth and the genito-urinary tract. Its use is claimed to prevent blood poisoning, lockjaw, hydrophobia and infectious diseases and mothers are invited to treat their babes' ailments with it (*Jour. A.M.A.*, Nov. 14, 1914, p. 1778).

*Iron Solution for Intravenous Therapy.*—This solution, manufactured by Perkins and Ross, Colorado Springs, Colo., contains soluble iron phosphate as its essential constituent and is recommended as a "chalybeate, emmenagogue and tonic." As the intravenous administration of a drug like iron, which must be continued for long periods, cannot be considered the method of choice, as the composition of the solution is such that changes may occur on standing, etc., which would make the preparation dangerous, and as the method of marketing the solution does not insure its sterility, further increasing the danger of its use, the product was refused recognition by the Council on Pharmacy and Chemistry (*Jour. A.M.A.*, Nov. 14, 1914, p. 1778).

*Phecolates, Phecolax, Phecozymes and Phecotones.* These are tablets put out by F. Waldo Whitney designed to form part of a system of treatment founded on the theory of autotoxemia. The different mixtures consist of the main of well-known remedies, one of them containing ten constituents. Most extravagant claims are made for these mixtures. The Council on Pharmacy and Chemistry voted to refuse them recognition as unscientific shotgun mixtures and because the names do not indicate their potent constituents (*Jour. A.M.A.*, Nov. 21, 1914, p. 1870).

*Radium Emanation Activators.*—Outfits for charging drinking water with radium emanation are now widely and extravagantly exploited. For an apparatus which imparts 2500 Mache units to water

each day as much as \$200 is asked. Theoretically, 72 cents worth of radium can produce 2500 Mache units of emanation per day. Even if, because of mechanical difficulties twenty times as much radium were required to be present in the activator, the cost of the radium in this \$200 apparatus would be only \$14.40 (*Jour. A.M.A.*, Nov. 14, 1914, p. 1780).

*Sherman's Non-Virulent Tubercle Vaccine.*—This product of G. H. Sherman, Detroit was refused recognition by the Council on Pharmacy and Chemistry because the far-reaching claims made for it were not substantiated by suitable evidence (*Jour. A.M.A.*, Nov. 21, 1914, p. 1870).

*White Sulphur Salts.*—This is an effervescing salt put on the market by the White Sulphur Springs, Inc. It was refused recognition by the Council on Pharmacy and Chemistry because it did not represent the water of White Sulphur Springs, Va., as claimed (*Jour. A.M.A.*, Nov. 21, 1914, p. 1870).

*Unguentum Selenio Vanadic, v. Roemer.*—This ointment, marketed by Schering and Glatz, New York, is claimed to contain selenium oxycyanid and vanadium chlorid. No evidence of the value of the preparation either in carcinoma or in any of the very long list of other diseases in which it is recommended was submitted. The pharmacologic evidence that such a preparation would be of value in such conditions being practically nil, the Council on Pharmacy and Chemistry refused recognition to the product (*Jour. A.M.A.*, Nov. 21, 1914, p. 1870).

*Iodia.*—Iodia (Battle & Co.) is claimed to contain potassium iodid in combination with iron phosphate and vegetable "principles." It is extravagantly recommended for use in many and varied conditions. It is asserted to be "almost a specific" in eczema and rheumatism and "a highly efficient form of iodine." The A.M.A. Chemical Laboratory having shown that untrue statements in regard to the composition and preparation are being made, the Council on Pharmacy and Chemistry refused recognition to Iodia on this account; because unwarranted therapeutic claims were made and because the use of this complex mixture is unscientific and a detriment to the profession and the public (*Jour. A.M.A.*, Nov. 21, 1914, p. 1871).

# The Journal

OF THE

## Michigan State Medical Society

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

Arthur M. Hume, Chairman .....Owosso.  
A. P. Biddle .....Detroit.  
W. J. Kay .....Lapeer.  
W. J. DuBois .....Grand Rapids.

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JANUARY

### Editorials

#### COUNCIL MEETING.

The semi-annual meeting of the Council of the Michigan State Medical Society will be held on Wednesday, January 20, 1915 at 10 a. m. at Ann Arbor for the transaction of the regular order of business and such other business as may properly come before this executive organization in the interest of the Michigan State Medical Society.

(Signed)

W. T. DODGE, Chairman.

F. C. WARNSHUIS, Secretary.

#### ANNUAL DUES.

The annual dues are now payable. Please make it a point to send them to your county secretary at once. It is just as easy to pay them now as two or three months hence. Your prompt compliance with this request will obviate considerable work for your local secretary. Please do not necessitate his personal solicitation, he has trouble and work enough as it is. Just give this a moment of your time and mail him your check today.

#### TREATMENT OF DISEASES OF THE EYE.

With conservation of vision becoming a general topic for study and discussion, it behooves

us to be more thorough in our diagnosis of diseases and injuries to the eyes. Every case that comes to our office should have our careful attention, and should be given all the time necessary for a thorough examination. The time for guess work has passed. With our modern equipment and laboratories, we have great advantage over the oculists of a few years ago. They did good work then, but we should not be satisfied with doing as well.

While our legislature has passed a law making it is a misdemeanor for an obstetrician or a midwife to neglect placing a few drops of 2 per cent. solution of silver nitrate in the eyes of every new-born child, we still see cases of ophthalmia neonatorum. Smears and cultures should be made from every case of purulent ophthalmia and the case treated as a gonorrheal infection until such time as a differential diagnosis can be made with the aid of the microscope.

In our manufacturing cities, we see many cases of injury to the eye-ball from flying pieces of metal. A slight cut of the cornea may be the only visible lesion, yet a piece of steel may have penetrated the globe. A slight cut in the iris, found after injury to the eye, is one of the main points of diagnosis. Here the ophthalmoscope, transilluminator, and Roentgen rays are indispensable in locating, and the giant magnet our greatest aid in removing the foreign body, providing it should be iron or steel.

A seemingly slight contusion of the eye-ball may later be complicated by iridocyclitis, traumatic cataract, or detachment of the retina. What may appear at first as a mild attack of conjunctivitis, may prove to be the beginning of a corneal ulcer. The corneal loupe and testing for corneal stains with fluorescein, are our sheet anchors here. The use of the tonometer, rather than depending on the finger-tips for taking the tension of the globe, in cases of suspected glaucoma, is a very important advancement. The improved perimeter for registering the visual field, and recently devised instruments for measuring muscular insufficiencies, make this part of our work much more accurate and scientific. The Wassermann test for syphilis and the gonorrheal fixation test in cases of iritis are material aids.

The detection and correction of errors of refraction has become a very important branch of our work. We do not have to depend entirely on test lenses and the patient's judgment, but with the retinoscope, the ophthalmometer, the ophthalmoscope, and the numerous other in-

struments at hand, our findings should be accurate and convincing.

Early refraction, in cases of strabismus of childhood, and the use of the amblyscope to assist in developing binocular vision should be encouraged.

To be scientific, we must be studious and energetic. Our grateful patients and the self satisfaction of having done our best, should amply repay us.

C. B. BIRD.

### OTOLOGY.

At the annual meeting of the Medical Society of the state of New York, (*New York State Journal of Medicine* of November, 1914), Dr. Thomas J. Harris gave an excellent resume of the recent developments in otology, a perusal of which is highly recommended. Dr. Harris speaks especially of the modern conception of the importance of the streptococcus mucosus, the indication for operation in labyrinthine disease, brain abscess, and diagnosis and treatment of otitic meningitis, subjects which are foremost in the minds of the otologists for several years and which find further elucidation by writers. A few additional remarks may be useful:

First: A very important contribution to otology has been made by Prof. Walb of Bonn in his monograph "Concerning the Fractures of the Margo Tympanicus, a Contribution to the Knowledge of Results of Accidents." Walb, after many years of observation, claims that the diagnosis of fracture of the skull has almost always been made on account of two symptoms: (1) loss of consciousness; (2) hemorrhage from the ear. On the other hand, when hemorrhage from the ear was missing, a diagnosis of fracture of the skull was not made, but usually the diagnosis concussion of the brain was made. For most physicians, hemorrhage from the ear is the salient point. But already v. Bergmann says that even a violent hemorrhage from the ear alone after an injury to the head does not allow us to make the diagnosis of fracture of the base of the skull. Walb also claims that a hemorrhage can take place in the labyrinth if the fracture reaches only to the neighborhood. A hemorrhage in the labyrinth can also take place when there is no fracture at all. Walb does not consider the loss of consciousness a characteristic symptom. The base of the brain has nothing to do with consciousness. Loss of consciousness is the

result of a general concussion of the brain. Walb's observation led him to the conclusion that a hemorrhage more severe than that which results from a rupture of the drum membrane can take place without a fracture of the base. After reciting in full twenty-three cases, Walb comes to the following conclusions:

1. In injuries to the head by fall, stroke or blow, frequently a more severe hemorrhage from the ear is noticed. The most frequent sources are isolated fractures of the margo tympanicus which are usually associated with a rupture of the drum membrane.

2. The diagnosis of a fracture of the base of the skull can be diagnosed only by symptoms caused by defects, respectively, irritations which are caused by the fracture and its accompanying symptoms.

3. Peripheral fractures of the petrous bone are very frequently associated with injuries of the labyrinth. The latter are the cause and explanation of the complaints which continue for a long time after the injury, especially hardness of hearing, headache and dizziness.

The fractures of the margo tympanicus, with or without rupture of the drum membrane, heal mostly completely. They cause little or no annoyance after healing, especially the hearing is often little or not at all disturbed in cases in which the labyrinth remained healthy. Yet, there may be in the beginning, subjective noises in the ear caused by reflex irritation of the nerve ends healed in the scar of the drum membrane.

5. In the great majority of cases, the traumatic injuries of the drum membrane heal without leaving a perforation, even if the injury was accompanied by a middle ear suppuration. If we find a larger round perforation with persisting suppuration especially in both ears, the suspicion is justified that the trouble cannot be referred to the accident but existed previous to the same.

6. Rupture of the drum membrane without connection with margo fractures are very rarely caused by indirect injury; they are more frequently caused in cases in which the drum membrane was thinned and flabby.

Second: Prof. Denker, of Halle, has added to our knowledge of otitic and traumatic meningitis (*Zeitschrift für Ohrenheilkunde*, etc., March, 1914). Denker refers to the discussion of Preysing's paper on "The Surgical Therapy of Otitic Meningitis," in which two questions were prominent, one concerning the diagnosis based on subjective and objective symptoms,

the other concerning the success of treatment.

In regard to the first question, we must decide whether in the presence of outspoken meningeal symptoms, the diagnosis of a diffuse purulent meningitis can be made if the spinal fluid shows only higher pressure, marked increase of leucocytes, but is sterile, or, whether we must demand for a diagnosis, presence of pathogenic micro-organisms in the cerebro-spinal fluid.

Second, can we favorably influence the course of a diffuse purulent meningitis by medical or surgical treatment, and which remedies are the most favorable to cause a cure?

Denker comes to the conclusion that in the treatment of otitic meningitis the main stress must be laid on the evacuation of the primary focus in the middle ear and labyrinth, and on the lumbar puncture, which, under circumstances, must be repeated several times. If it is possible to, early, demonstrate a certain micro-organism in the lumbar fluid (streptococcus, pneumococcus, meningococcus), the respective serum must be injected in the spine (polyvalent anti-streptococcic serum, pneumococcic serum, meningococcic serum).

Denker did not see, in two trials, a favorable influence of intraspinal injections of urotropin, but he could see a favorable influence by giving urotropin by mouth. Therefore, he not only gives urotropin in meningitis but, prophylactically, 0.3 three times a day in all cases in which a postoperative meningitis is to be taken into account, i. e., in suppurative labyrinthitis, in radical operations on the frontal sinus, ethmoid, sphenoid and in resections of the septum which must be made near to the cribriform plate. Denker is of the opinion that otitic diffuse leptomeningitis can be cured even if there are pathogenic micro-organisms (streptococci, staphylococci, diplococci) in the spinal fluid.

He says that we must not doubt the diagnosis of a diffuse purulent meningitis because the patient was cured. Not only his own work but also the publications of Schmiegelow, Alexander, Mygind, Voss and others report cured cases. In these cases the cloudy spinal fluid contained, besides numerous leucocytes, also pathogenic micro-organisms (streptostaphylo-diplococci). This proves that an otogenous diffuse leptomeningitis can be cured. His clinical experiences tell him that the prognosis is better in meningitis following a chronic than in that following an acute ear suppuration. Denker, however, does not claim that

all cases of otitic meningitis can be cured. Numerous observations have shown that we are powerless in the majority of cases if the subarachnoidal space is inundated by numerous strongly virulent microbes and the disease shows from the beginning fulminating clinical symptoms. Then all therapeutic measures are useless. In otitic meningitis the former pessimism is not justified; still less, however, a too optimistic conception.

Third: A very important point in treating an acute middle ear suppuration, such as every physician frequently sees, is made by Heine (*Operations on the Ear*, 1913), namely, absolute rest and an early paracentesis. He was himself more conservative in the beginning of his practice as an aurist, but experience has taught him, like others, that inflammations of the middle ear heal quicker and lead more rarely to complications if the drum membrane is incised as soon as it is necessary. He does not consider it as a cure-all, because also other circumstances come into consideration, namely, the kind of infection, structure of the mastoid process, etc., and not less the conduct of the patient himself. Heine considers any somewhat severe middle ear suppuration a serious disease, therefore, the patient has to stay in bed even if there is no pain, no fever, and if he feels well. Patients should remain in bed six to ten days, until it is plain that the inflammation is receding. Heine considers this absolute rest and an early paracentesis the most potent agency in the whole treatment of acute middle ear suppuration. Patients with acute otitis media should not be treated in the dispensary. The chances for the patient are not so good. Heine finds the proof by comparing the results in private practice and in the polyclinic. He cannot remember a case in which he had to open the mastoid in private practice, provided an early paracentesis had been made and the patient was kept in bed, although he admits that it may become necessary once in a while.

Fourth: Alfred Zimmerman in Halle, *Zeitschrift fuer Ohrenheilkunde* etc., July, 1914 studied "The application of the dialysis method of Abderhalden as to the clinical aspect of otogenous intracranial complications, at the same time a contribution to the organ specificity of the protective enzymes (Abderhalden) on the basis of animal experiments and clinical studies." Zimmermann reaches the following conclusions:

1. Following experimental injuries of the

brain or peripheral nerves there constantly appear within as short a time as four days protective enzymes in the plasma of the experimental animals, specific for nerve tissue.

2. The changes in the brain necessary to release such an effect can fluctuate in kind, intensity or volume within very wide limits. Therefore the Abderhalden reaction is a very sensitive reagent concerning the most varied lesions of the nervous system.

3. Such ferments can regularly be established in the serum of patients in whom the brain affection can be demonstrated.

4. These ferments are of a strictly organ specific character.

5. By the dialysis method, and under the conditions of the experiment, a difference in the reaction cannot be demonstrated in the affection of single anatomically and functionally different portions of the nervous system if correspondingly different substrata are used. Therefore it is at present impossible to make a localizing diagnosis within the nervous system.

6. The ferments found in the plasma which are specifically active on nerve tissue do not show a species specificity (Artspezifität). The homologous organs of the various species are also decomposed. Principally, therefore, a substitution of human organs by organs of animals is possible, but for practical reasons this is not recommended.

7. Cases of the extradural abscesses and of meningitis can also give a positive serum-reaction. One must assume for such cases with positive reaction that we have before us complicating encephalic or meningo-encephalic processes.

8. Cases of uncomplicated otitis confined to the middle ear or cases of mastoiditis which have not reached the dura show a negative reaction.

9. A decomposition of brain substance follows also a general narcosis by inhalation. Therefore the blood specimens must always be taken before such a narcosis. Positive results after a narcosis cannot be used for diagnosis.

10. A positive reaction can be expected with certainty in all cases in which an abscess of the brain is present, but—

11. It is not necessary that an abscess of the brain is present when the Abderhalden reaction is positive.

12. A positive reaction can indicate a simple encephalitis because the reaction does not give the nature of the underlying process. De-

composition of brain has been shown also in other diseases e.g. in paralysis, epilepsy and all forms of dementia.

13. A simple extradural abscess, a sinus thrombosis, a circumscribed or diffuse meningitis can give a positive reaction.

14. The positive result alone does not furnish a direct indication for surgical interference on the brain.

15. Diagnostic points may eventually be given in some cases by the positive reaction in very close connection with the clinical picture and the findings in the spinal fluid.

16. The negative reaction is of great importance. A brain abscess can be excluded with absolute certainty. This pertains also to encapsulated abscesses.

17. The negative reaction also probably allows us to exclude the presence of meningitis because it may be assumed that in each meningitis we find simultaneously encephalitic processes. The diagnostic value of a normal spinal fluid is perhaps materially increased by a negative serum-reaction because the lumbar punctures may not give a clue for the diagnosis of a circumscribed meningitis or meningo-encephalitis.

18. The negative reaction may perhaps be of great help to us in cases in which we have, besides an otitis, symptoms on the part of the brain which may be deceiving while caused by diseases of other organs. This applies especially to hysterical people with brain symptoms.

Zimmermann adds that much work is yet to be done in this new field of investigation and that he only wanted to point the way.

EMIL AMBERG.

## CEREBRO-SPINAL SYPHILIS AND ITS TREATMENT.

### A CONSERVATIVE TREATMENT.

That, under the more modern conception and later treatment, cases of both tabes and general paresis have shown remarkable improvement there is no gainsaying, and this has been true with the intravenous administration of salvarsan or neo-salvarsan alone, although better results have followed the combined use of mercury and potassium iodide between treatments.

Sub-arachnoid injections of serum which has been salvarsanized *in vivo* and that which has been salvarsanized *in vitro*, and contains a known amount of salvarsan or neo-salvarsan, have also yielded results sufficiently favorable to encourage their further use. Yet the curability of

either paresis or tabes has by no means been demonstrated, and we must be on our guard against an overhasty enthusiasm which may lead us to disregard the verdict of French workers who have gone still further and done not a little work not only in the intra-spinous subarachnoid injections but in the cerebral subarachnoid treatment as well and who say, in spite of improvement in some cases, that the results are by no means brilliant nor the outlook tremendously alluring.

Especially if one is in daily contact with florid syphilis and the remarkable results so often there seen from newer therapeutics, is it easy to be led into a too sanguine enthusiasm which readily promises over-much for the intra-spinous treatment of tabes and paresis. We need as yet to feel our way very carefully in this newer ground and are not as yet warranted in promising great things from late procedures and this especially in view of the damage which has too often been already done when these cases first come to treatment. Their use, however is amply warranted by the improvement already secured in repeated cases.

CHAS. W. HITCHCOCK.

#### THE COUNTY SOCIETY.

"Every county society seems to have a common life history—an enthusiastic birth, a more or less stunted growth and then renewed vitality and great development. Numbers alone do not count for anything, for some national societies of high efficiency can at some meetings muster only ten or a dozen members. What is needed most of all is an *"esprit de corps"* permeating the whole organization; an enthusiasm which grips every member and compels him to perform gladly any duty which the society may request of him; a receptive state of mind that he may note what the various speakers affirm and decide by his own investigations of the subject whether they have read their theme aright, and the criticism which may follow, even if severe, need not be given in a malignant spirit.

"Again, every society desires as members every eligible man in the county and we hope to have that duty done before the state solicitor comes around. The conditions as printed on the application blanks are liberal enough for all consciences. It is a mistake for any man to think that he can stand alone in the exigencies of practice. The field is too broad, the knowledge is too cheap, and the ability of most minds to

retain and apply all they seek to know too limited, and at the bedside one finds that the symptoms are baffling and the judgment fallacious.

"No, no man knows it all and each one needs the moral support of the county society, and the society needs him. One says to me: 'I don't go to the meetings because I can read all they have to say in the books.' It is very true that you busy men are not engaged in research work and still there is not one of you who is not intensely interested in all the research work as reported in your medical magazines and books. You pride yourselves upon being up to date. Why, gentlemen, there is enough 'medical news' in sight at the present moment to keep us all talking medicine for the next twenty-five years. Get on your feet once in a while and tell us what you know, what you expect and what you hope about these things and the society will flourish like a green bay-tree."

The above is the gist of President Larsons' Inaugural address before the Marquette-Alger County Society. The sentiment and thought expressed is of more than passing interest.

The need or not, of organized medical effort is no longer debatable. It is universally conceded that medical organization has been the essential factor in securing efficiency, progressiveness and prosperity for the individual doctor and through him has brought to the community in which he resides movements that have bettered the physical and sanitary conditions of the inhabitants of that community.

The plan whereby the county society was made the unit of organized medicine is also recognized as being both wise and just.

Those of us who were not privileged to assist in the pioneer days of this organization work owe a debt of gratitude for all that has been secured and provided for us and granting us this goodly heritage. To express our appreciation it devolves upon us to not only diligently maintain all that has been wrought but to do our part in furthering that which still demands our united efforts and time and so maintain the efficiency of each unit of the organization.

*Narcophin.*—Narcophin consists of morphin meconate and narcotin meconate in molecular proportions. It is claimed to be a scientific substitute for opium and to have advantages over morphin. The Council on Pharmacy and Chemistry was unable to accept the therapeutic claims made for it (*Jour. A.M.A.*, Nov. 21, p. 1872).

## County Society News

### CALHOUN COUNTY

Some Aspects of Congenital Syphilis Affecting the Central Nervous System.

Dr. Carl G. Camp, Ann Arbor.

Metastatic Deposits in the Central Nervous System.

Dr. D'Orsay Hecht, Chicago.

For the last two or three years, the entertainment committees who have had charge of providing the entertainment for the annual meetings, have been disappointed in the attendance at these functions. With this in mind, the committee this year has introduced two changes which it is hoped will prove satisfactory. The hour of the banquet has been fixed at six o'clock as this was thought to be more favorable, and it was decided to ask all to attend as guests of the society this year. It is to be hoped that all who can possibly arrange to be present will show their appreciation by their presence.

We would particularly call your attention to the courtesy extended our Society by our worthy Mayor, Hon. John W. Bailey, in that we are privileged to hold this annual meeting in the commission room of the new City Hall. We feel sure the membership will be pleased to know that we also have permission to use this same room on the first Tuesday evening of each month for our regular monthly meetings.

#### SECRETARY'S REPORT.

To the officers and members of the Calhoun County Medical Society. The following report for the year ending Dec. 1, 1914, is hereby respectfully submitted by your Secretary.

The year just closing has been the most auspicious in the history of the Society in several ways. A greater number of meetings have been held, the attendance has been markedly increased and a larger number of distinguished essayists have appeared before us than ever previously in our history, while the membership has increased until we now number more members than ever before, so far as I am able to ascertain.

The meetings held during this year, including the annual meeting, have been ten in number. Three of these were under the old plan of Special Scientific Meetings. Two were quarterly meetings, while four regularly monthly meetings have been held, and one special meeting. The attendance at these meetings has averaged about sixty, while the greatest attendance at any one time was reached on the 6th of October when 150 members, friends and guests assembled to hear Dr. George W. Crile of Cleveland.

The plan of holding evening meetings has been continued throughout this year, and we believe has been of marked value to the Society. At every meeting of the Society, with a single exception, we have had some distinguished essayist address us. These have included such men as Dr. Milton M. Portis of Chicago, Dr. Eusterman of the Mayo Clinic, Dr. Harry M. Richter of Chicago, Dr. Peterson, President-elect of the State Medical Society, of Ann Arbor, Dr. Robert B. Preble of Chicago, Dr. George W. Crile of Cleveland and Dr. Harvey R. Gaylord of Buffalo, N. Y., together with Dr. D'Orsay Hecht of Chicago and Dr. Carl D. Camp of Ann

Arbor, who are to be our distinguished guests for this meeting.

It must be admitted this is an unusual array of outside talent to have presented before a County Society during a single year, and the Program Committee is to be congratulated upon their success along this line.

Death has entered our ranks but once during the year when Dr. Ira Young Kezartee, an honorary member, died at his home in this city on May 4.

The Society, through its councilor and membership, was more or less instrumental in assisting the Medico-Legal Committee of the State Society to secure the conviction of Dr. Thomas H. Oliver, accused of illegal practice, in prescribing and furnishing heroin for other than legitimate and medicinal purposes. Dr. Oliver was sentenced to imprisonment in the county jail ninety days and to pay a fine of \$500. The sentence was served, but the fine was never paid. Dr. Oliver was summoned to appear before the State Board of Registration in Medicine, and to show cause why his certificate of registration should not be revoked. He failed to appear and his certificate of registration was evoked. He has since left the borders of the state of Michigan.

During the year our by-laws were amended whereby instead of holding our meetings quarterly we now hold monthly meetings except during the months of July and August, during which time meetings will be suspended.

We are pleased to report that our membership for this year has increased from sixty-nine at the close of 1913, to eighty at the end of 1914, with several applications now pending. This you will observe entitled our Society to an additional representative in the House of Delegates of the State Society, and it will be our duty at this annual meeting to elect two delegates and two alternates.

Our Society established a record for the payment of dues this year, there being in the entire list of the membership but a single case of delinquency. This is a record which was equalled by no Society numbering as many members as does ours.

During the year the plan of publishing a Bulletin of the meetings was tried experimentally and finally adopted by the Society, and we are pleased to publish our annual report in the Bulletin at this time, that the same may be inspected by the members, previous to the meeting, and much valuable time be saved. Thus far the Bulletin has proved to be self supporting.

#### TREASURER'S REPORT FOR YEAR ENDING DECEMBER 1, 1914.

Balance on hand Dec. 1, 1913 .....	\$146.47
Received from members .....	338.00
Received from all other sources ....	45.15
	<b>\$579.62</b>

#### Disbursements.

Michigan State Medical Society ....	\$232.00
1912 Banquet. (Old bill) .....	15.00
1913 Banquet .....	127.47
Essayists Expenses .....	18.12
Flowers .....	22.00
Postage and Printing .....	34.56
A. M. A. Directory .....	7.00
	<b>\$456.15</b>

Balance on hand Dec. 1, 1914. ....	<b>\$123.47</b>
A. F. KINGSLEY, Secretary-Treas.	

### HOUGHTON COUNTY

The regular meeting of the Houghton County Medical Society was held at the Scott Hotel, Hancock on Dec. 7, 1914. There were twenty-two members present. The first paper on the program, Ununited Fractures, by Dr. D. D. Todd, Calumet, consisted of a report of nineteen cases of fracture of the shaft of the tibia.

Bone, inlay and intramedullary splints were used in the operative cases with uniform success.

The second number on the program was an exhaustive study of Trachoma, by Dr. A. B. Wesels of Houghton. The subject was exceptionally well handled.

It was voted to hold a banquet after the annual meeting in January.

I. D. STERN, Secretary.

### INGHAM COUNTY

The Annual Meeting of the Ingham County Medical Society was held November 12, 1914 at the Hotel Downey, Lansing Mich.

#### Program.

Paper, "Organization."

Dr. C. B. Fulkerson, Kalamazoo.

President's Address.

Dr. Samuel Osborn, Lansing.

The following officers were elected for the year 1914-15:

President—B. M. Davey.

Vice-President—G. F. Bauch.

Secretary and Treasurer—L. C. Towne.

Member of Medico-Legal Committee—M. L. Holm.

Delegate to State Society Meeting—J. G. Rulison.

Alternate Delegate to State Society Meeting—F. M. Huntley.

Following the business meeting, the members of the society and ladies were tendered a splendid banquet by Dr. Samuel Osborn, retiring President.

L. C. TOWNE, Secretary.

1. Paper, Chronic Constipation.

Dr. F. H. Enders, Jackson, Mich.

Discussion by Drs. O. H. Freeland, W. G. Wight, Anna Ballard, S. Osborn.

2. Paper, Education and Care of Tuberculosis Patients.

Miss Mary C. Nelson, China.

Discussion by Dr. Jno. L. Burkhart, and members of the Ingham County Medical and Nurses Associations.

RESOLVED, That the Ingham County Medical Society accept the invitation of the Ingham County Nurses Association to furnish medical attendance for a free clinic or dispensary and that the members be asked to volunteer for service to a committee composed of the city physicians and members of the Ingham County Nurses Association.

#### SOCIAL SURVEY.

The Ingham County Medical Society has had during the past year active representation on the Social Survey Committee. The work of the Social Survey Committee has been of particular interest

to the physicians of this city because it has consisted of a survey of the city from a sanitary point of view and involving thorough going reports on the water supply, garbage disposal, form of health administration and housing conditions. The sewage report is not in yet but will be soon.

As a result of these investigations two matters have been submitted to the voters of Lansing that have received the indorsement of the city officers, the Chambers of Commerce and the most public spirited citizens, namely: the amendment to the city charter providing for a non-partisan Health Commission constituted as are the present police and fire commissions in place of the present Board of Health; second and the proposition for a municipal collection and disposal of garbage; a third important step is the decision to co-operate with other cities in securing the passage of a model housing law to prevent the evil of dark and unventilated tenement rooms and other unsanitary conditions.

None of these matters have as yet been carried through but the Social Survey Committee has hopes that as in the milk campaign success will ultimately come for these three important advances in city sanitation.

1. Paper, Surgical Diseases of the Upper Abdomen.

Dr. L. W. Toles.

Discussion by Drs. G F. Bauch and W. E. McNarma.

2. Paper, A Free Clinic Proposition?

Dr. Clara M. Davis.

Discussion by Dr. H. S. Bartholomew.

Under arrangement for the succeeding months papers.—Dr. Joseph Colt Bloodgood, Baltimore, Md., Drs. Walker Parker, P. M. Hickey, Wesley Taylor, Angus McLean, Detroit; Drs. C. G. Darling, T. Klingmann, Mark Marshall, V. C. Vaughn, Sr., Ann Arbor, Dr. R. C. Stone, Battle Creek.

#### 1915 RESOLUTIONS.

1. To defend the fraternity.
2. To prescribe no patent medicines.
3. To charge fees just to self and patron.
4. To regard my neighbor kindly, not jealously.
5. To work for the Ingham County Medical Society
6. To devote one hour daily to reading Medicine.
7. To attend every meeting of the Society.
8. To take part in the discussions.
9. To prepare a paper or address when requested.
10. To get a new member.

### IONIA COUNTY

The annual meeting of the Ionia County Medical Society was held in Ionia, Nov. 19, 1914, when the following officers were elected for the coming year:

President—Dr. F. A. Hargrave, Palo.

Vice-Presidents—Dr. F. W. Braley, Saranac; Dr. H. M. Maynard, Ionia and Dr. F. L. Morse, Lake Odessa.

Secretary-Treasurer—Dr. R. R. Whitten, Ionia.

Delegate to State Society—Dr. Whitten.

Alternate—Dr. Maynard.

Medico-Legal—Dr. H. B. Knapp, Ionia.

At this meeting Dr. H. M. Maynard read a paper on "Medical Treatment of Hyperthyroidism." Dr. M. A. Mortensen of Battle Creek presented the

subject of "Cardiac Irregularity," in the light of the latest scientific research.

The next meeting will be held on the second Thursday in January, and will be in charge of the newly elected officers.

JOHN J. McCANN, Secretary.

### LENAWEE COUNTY

At the September meeting of the Lenawee County Medical Society a very well prepared paper on "Ulcer of the Stomach" was read by Dr. O. Whitney of Jasper. This was followed by a general discussion.

At the November meeting Dr. L. J. Hirschman of Detroit gave us a very good address on "Fistula-in-ano," illustrated by numerous lantern slides. The address was not only interesting but also very instructive as the doctor brought many new ideas in the diagnosis and treatment of this class of disease which have been brought about by the great advance in this, as well as in all departments of medicine.

F. A. HOWLAND, Secretary.

The December meeting of the Lenawee County Medical Society was the annual meeting and the following officers were elected.

President—Geo. M. Lochner, Adrian.

Vice-President—F. A. Howland, Adrian.

Secretary-Treasurer—W. S. McKenzie, Adrian.

Member Medical Defense—L. C. North, Tecumseh.

Delegate to State Medical Society—I. L. Spalding, Hudson.

Alternate to State Medical Society—W. E. Jewett, Jr., Adrian.

Dr. Wm. Jewett, Jr., read an excellent paper on Hook Worm, illustrated by some fine microscopic specimens. Dr. Jewett gathered all the data for his paper from a case he is treating right here in Adrian, Michigan, proving that without a doubt many of the cases that have been diagnosed as Pernicious Anemia may have been Hook Worm instead. The doctor's paper was very interesting and very thoroughly discussed.

F. A. HOWLAND, Secretary.

### MARQUETTE-ALGER COUNTY

The Marquette-Alger County Medical Society met in the City Hall, Marquette, Nov. 27, 1914.

The meeting was addressed by the Mayor of Marquette in furtherance of a plan he has evolved of getting from the State Government a branch of the State Laboratory established at some point in the Upper Peninsula. After a general discussion a resolution was adopted requesting the secretaries of all the medical societies in the district to bring the subject before their membership that the plan of Mayor Begole may have their united support and proper presentation to our legislators.

A resolution was also adopted requesting a voluntary subscription of one dollar and fifty cents per member, which would amount to sixty-one dollars, one half of which should be donated to the relief

fund for the Belgium physicians and one-half for the Red Cross of Vienna in the form of one hundred pounds of absorbent cotton. Both donations were on their way the next day.

President C. J. Larson read a paper on "Shock" which was discussed at length.

F. A. FELCH, Secretary.

### ST. CLAIR COUNTY

On the evening of November 5th the St. Clair County Medical Society met at the Elks Temple for its regular monthly meeting. We had as a guest Dr. C. W. Barrett, a well-known Chicago gynecologist.

After a fried chicken supper, at which there was the largest attendance in the history of the Society, the members adjourned to the parlors for a social meeting. Later the meeting was addressed by Dr. Barrett, who took for his subject "Uterine Prolapse and Its Treatment." The lecture was illustrated with lantern slides and proved very interesting and instructive.

R. K. WHEELER, Secretary.

The annual meeting of the St. Clair County Medical Society was held Thursday evening, Dec. 10, 1914.

After a social half hour the meeting was called to order.

Dr. D. J. McColl of Port Huron read a very interesting and instructive paper on "Habitual Constipation." The discussion was opened by Dr. S. K. Smith.

The following officers were elected for the coming year:

President—Dr. J. A. Attridge, Port Huron.

Vice-Pres.—Dr. J. L. Chester, Emmett.

Sec'y-Treas.—Dr. R. K. Wheeler, Port Huron.

Delegate—Dr. A. J. MacKenzie, Port Huron.

Alternate—Dr. W. H. Morris, Port Huron.

Board of Directors—Dr. Stockwell for three years, Dr. Treadgold for two years, Dr. Fraser for one year.

A Dutch lunch was served after the meeting and everyone seemed to enjoy himself.

R. K. WHEELER, Secretary.

### WAYNE COUNTY

#### PROGRAM.

Monday, Nov. 16—General Meeting.

Our Present Knowledge of Cancer Immunity.

Dr. Harvey R. Gaylord,

Director State Institute for the Study of Malignant Disease, Buffalo, New York.

Discussion opened by Drs. Angus McLean, Walter J. Vaughan, Ernest K. Cullen.

The Tuberculosis Problem.

Dr. Earl S. Bullock, Silver City, N. M.

Discussion opened by Drs. B. R. Shurly, V. C. Vaughan, Jr.

Monday, Nov. 23—Surgical Section.

Results of Bone Transplantation, with illustrations.

Dr. F. C. Kidner.

Discussion opened by Drs. P. M. Hickey, W. E. Blodgett, A. D. LaFerte.

A number of X-Ray plates were shown, illustrating the different phases of bone transplants. They showed distinctly certain of the causes which are apt to cause failure in this operation, such as necrosis of the transplant, fracture and absorption.

From the plates and from experience with the cases themselves, the conclusions were drawn:

1. The difficulties of technic in transplantation of bone are marked, especially when the bone is to be placed in the spine.

2. There is a great tendency to a low grade infection appearing a considerable period after the operation.

3. This tendency to infection leads to localized destruction of the transplant with exfoliation of parts on the transplant.

4. This exfoliation really goes on to the complete loss of the transplant, that is, the vitality of the transplanted bone is so great that most of it will persist and perform its function.

5. That bone transplantation for tuberculosis of the spine is not in itself sufficient to cure the disease; other supporting measures must be used. It undoubtedly hastens cure.

6. Transplants can be placed direct in tuberculous tissue and survive. This opens up a large field of usefulness in the fixation, temporary or permanent, or tubercular joints, such as the wrist or knee.

Tuesday Evening, Nov. 24, 8 P. M.

Social Surprise Smoker.

Something different. Watch our arrangement.

Any person caught talking professional business fined \$27,000,000.

Monday, Nov. 30—General Meeting.

Communication From the Bureau of Wet-Nurses.

Dr. Herbert M. Rich, Chairman Committee.

Address—Facts and Fallacies About Breast-Feeding.

Dr. Isaac A. Abt,

Professor of the Diseases of Children, Rush Medical College, University of Chicago.

Discussion opened by Dr. B. R. Hoobler.

Monday, Dec. 7—General Meeting.

The Modern Conception of Chronic Colitis.

Dr. M. A. Mortenson, of Battle Creek.

Discussion opened by Drs. E. W. Haas, Chas. D.

Aaron, L. J. Hirschman.

Monday, Dec. 14—Medical Section.

A New Antidote for Corrosive Sublimate Poisoning

Wm. A. Hall, Ph. B.

Report of Case of Corrosive Sublimate Poisoning.

Dr. G. B. Hoops.

Discussion opened by Drs. J. E. Clark, Delos L.

Parker, Frank Lydston Newman.

Monday, Dec. 21—General Meeting.

Urology in Women.

Dr. Henry Dawson Furniss, New York City.

Discussion opened by Drs. H. W. Lonyear, Dr. Wm. F. Metcalf, B. R. Schenk.

#### A PHYSICIAN'S BUSINESS BUREAU.

Attend the meeting next Monday night and have your part in the formation of an effective Business Bureau.

In a November issue of the *Wayne County Medical Society Weekly* there was a report of the joint committee from the Wayne County Medical Association, the East Side Physicians' Association and the West Side Physicians' Club relating to the establishment of a Credit Bureau. The committee gleaned, from various sources, that a number of business needs of the profession could be cared for by the instrumentality of a bureau properly equipped and supported by the societies represented.

It is apparent that members of these societies have a sum total income of two million or more dollars per annum. This represents an enormous business which should receive not only individual but concerted study and attention.

To educate one another in the best economic principle applicable to what is usually considered a difficult business, and to procure by virtue of the association of so many physicians what is manifestly impossible for an individual or any small association of individuals, were practical endeavors warranted.

The committee, therefore, seeks to ascertain from members of the societies a free impression of common business needs and business problems amenable to beneficial consideration and treatment through the facilities afforded by a large organization. The report submitted November 2 makes mention of the following:

I. The establishment of a bureau.

II. Said bureau to be called "The Detroit Physicians' Business Bureau.

III. A committee to draft a constitution and by-laws.

IV. Said constitution and by-laws be submitted to each society for approval.

V. A policy as follows:

(a) The listing and prevention of bad accounts.

(b) A physician's business efficiency expert. (Optional.)

(c) A business educational campaign.—Yearly meetings in each society given to the study of better business methods.

(d) Investment information.

(e) Bookkeeping. (Optional.)

(f) Collections. (If deemed advisable later.)

VI. Membership in this Bureau to consist of members in good standing in either the Wayne County Medical Association, The East Side Physicians' Association, the West Side Physicians' Association or any other recognized Medical Society.

VII. This Bureau to be under the control of a Board of Control, for representation from each society.

VIII. The headquarters of this Bureau to be in the Wayne County Medical Society Building.

IX. Provision in the by-laws for written and telephone reports to members.

X. Provision in the by-laws for the payment of listed accounts at the office of the Bureau to a bonded assistant.

To the foregoing such additions may be made as are found necessary and advisable.

There are some pertinent relating facts to this concerted business endeavor; some of those refer

to the statements, "Physicians Are Poor Business Men" and the "Physician's Account is the Last to Be Paid."

There are others integral with the pure scientific life work of the physician, such as the controversy now heard; that the stress of financial, physical, and mental difficulties does not serve for the maximum of productivity. It is, however, beyond argument that modern equipment can be attained and maintained only by a most liberal expenditure of time, effort, and money and it is our conviction that the vast majority of our profession must realize the foregoing means directly from the immediate income of daily practice.

There should be no offence to the traditions of medicine nor to the scientific spirit of practice, if the science of business is given a due share of our attention.

(Signed) James E. Davis.

#### NOTICE.

At the general meeting of January 4, 1915, two important subjects will be brought up for consideration by the society.

- 1 The delegates and alternates to the Michigan State Medical Society, fifteen of each, will be elected.
2. The Council will report upon the advisability of inviting the American Medical Association to hold the meeting of 1916 in Detroit.

### State News Notes

The Ingham County Medical Society has commenced the issuance of a very creditable bulletin. This bulletin, which has been named "Aesculapius" is full of interest and will undoubtedly be of great value in stimulating the interest of the members in their county organization. We suggest that other county societies publishing bulletins place the name of the secretary of the Ingham County Society upon their mailing list.

In honor of his 70th birthday Dr. C. P. Brown of Spring Lake entertained the members of the Grand Haven and Spring Lake Medical Association on November 23. After an enjoyable dinner Dr. A. Vander Veen of Grand Haven presented the host with a beautiful volume of the International Dictionary.

The State Board of Health, together with the Committee on Public Health and Legislation of our State Society, held a joint meeting in Lansing for the purpose of discussing proposed medical legislation that is to be introduced into the legislature during the coming session.

The following Detroit surgeons were conferred with the degree of fellowship of the American College of Surgeons at the November convocation which was held in Washington: Drs. Anna O'Dell, Angus McLean, Oscar LeSure, F. B. Tibbals, and J. B. Matthews.

Dr. T. M. Koon of Grand Rapids, who became ill while visiting at Minneapolis, is reported as practically recovered from his illness and will resume practice during the fore part of the year.

Dr. F. R. Blanchard of Lakeview has sold his practice to Dr. H. N. Flexner of Joliet, Ill., and has moved to Eaton Rapids where he has purchased the practice of Dr. C. W. Ellis.

The Directors of the Oakland County Hospital Association have tendered the hospital building to the city of Pontiac with the provision that the city assume the responsibility of its maintenance.

Representatives of the Catholic Church in Jackson have purchased the White Cross Sanitarium and on Jan. 1, opened it as the Mercy Hospital of Jackson.

Dr. J. Toan, who recently gave up his practice at Muir has been appointed assistant physician at the State Tuberculosis Sanitarium at Howell.

The Ingham County Medical Society have agreed to furnish medical and surgical services to the Lansing Free Clinic.

Drs. W. G. Bird and G. H. Bahlman of Flint announce the establishment of branch offices in Owosso.

Dr. O. B. Lambert of Escanaba has located in Algoma, Wis.

Dr. John Walch of Springfield, Ill. has located in Escanaba.

Dr. W. S. Sharpe has been appointed city health officer of Dowagiac.

Dr. J. B. Bradley of Eaton Rapids is on an extended pleasure trip through the West.

Dr. Fwastell of Detroit has become associated with Dr. L. C. Kent of Onaway.

Dr. A. J. Sahs of Mackinaw City has removed to Cheboygan and is now practicing in that city.

Dr. H. A. Sharpe of L'Anse has recently been elected coroner of Baraga County.

### Book Reviews

LOCAL AND REGIONAL ANESTHESIA, including Analgesia. By Carroll W. Allen, M.D., of Tulane University, New Orleans, with an introduction by Rudolph Matas, M.D., of Tulane University, New Orleans. Octavo of 625 pages with 255 illustrations. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$6.00 net; Half Morocco: \$7.50 net.

If the reader desires to secure the history, principles, practice and actual technic of local anesthesia

and analgesia we unhesitatingly recommend the purchase of this volume. It is a full discussion of every phase on the subject, from every side, and is illustrated most freely and therefore is more valuable as a guide. A careful study warrants us in stating that this work covers the subject in a most instructive manner and so causes it to be recognized as an authority that is difficult to equal.

### *Miscellany*

#### UNGUENTUM SELENIO-VANADIC (V. ROEMER) IMPROVED.

A Systemic (Percutaneous) and Topical Inunction Medication for the Non-Narcotic Control of Pain and the Palliative Treatment of Inoperable, Recurrent and Metastatic Cancer and other Malignant Diseases.—A Suggestion for Ante-Operative (Modifying) and Post-Operative (Prophylactic) Management of Reasonable Operable Malignant Cases.—A New Therapeutic Agent of the Broadest Usefulness in General Surgery and Medicine.

Since its initial bow, only a few months ago, Unguentum Selenio-Vanadic (v. Roemer) has attracted considerable attention on the part of physicians and surgeons in all sections of the country.

This is due to two circumstances: First, that this product represents, so far, the only rational medium of applying a, by no means new and scientifically established therapeutic principle, which for lack of a sufficiently safe and practical form of medication, has never been given an adequate clinical chance. Second, because being suggested for use in a field in which, of necessity, drug nihilism is rife, the conservative character of the actual claims made for Unguentum Selenio-Vanadic (v. Roemer), has procured for it earnest consideration even in the highest and most skeptic and surgical circles.

As stated above and as has been previously emphasized, Unguentum Selenio-Vanadic (v. Roemer) is not to be regarded as a "cancer cure," nor as one of the numerous suggestions of doing away with the surgeon's work, but only as a readily accessible adjuvant in his and the general practitioner's hands. Its mission is to make rational and successful surgical intervention more frequently possible, to vouchsafe a more lasting effect from the same and to render the patient's existence a more tolerable one when surgical aid has been sought too late, or, when it has failed, as it unfortunately still does in a great proportion of cases in spite of constantly advancing skill and technic.

As has been predicted, however, the remarkable pain-relieving, antiseptic and alterative properties of Unguentum Selenio-Vanadic (v. Roemer) have also come to be utilized extensively and successfully outside of the field of malignant diseases, in the prophylaxis and treatment of local and constitutional

septic, suppurating, ulcerative, irritant and painful processes.

Gratifying as is the recognition which Unguentum Selenio-Vanadic (v. Roemer) has so far received, its general adoption by physicians and surgeons has been somewhat delayed by the fact that the ointments, as first marketed, proved to possess too stiff a base to permit of an entirely satisfactory and thoroughly reliable inunction procedure, the absorption being too slow, uncertain and tedious for the physician, or the attendant, and fraught with too much discomfort for the patient—hence, the frequent desultory use of the ointment resulting in wide fluctuations and, sometimes, in the entire absence of the normal physiologic effect.

This has been completely remedied in Unguentum Selenio-Vanadic (v. Roemer) Improved, the result of considerable experimentation and now exclusively on the market, the older form having been withdrawn. Not only is the base of the new ointment remarkably easily inuncted, but the new active Selenium-Vanadium compound itself has been modified successfully with a view to readier absorption and utilization by the organism.

This modified preparation continues to be manufactured by Mr. Arthur von Roemer, Apothecary of the German Hospital, Brooklyn, N. Y., and consists of 1 per cent. of the double salt of potassium seleno-cyanide of potassium vanadate with  $\frac{1}{2}$  per cent. of freshly precipitated amorphous selenium, incorporated in Eucerin, an ointment material which has attracted considerable attention on account of its special adaptability to metal and metallic salt medication by percutaneous inunction. The successful combination with a vanadium salt is made in view of the fact that vanadium, which is somewhat more generally known in therapeutics, also possesses to a marked degree the faculty of acting as "oxygen carrier," resembling hemoglobin in this respect and being therefore able to synergize with, or potentiate, the action of selenium. Furthermore vanadium salts are very active hematogenics, increasing both hemoglobin and red cells, powerful stimulants of leukocytosis and constitutional tonics of proven merit.

The new Unguentum Selenio-Vanadic (v. Roemer) is a light flesh-colored, perfectly uniform, absolutely stable, almost instantaneously absorbed ointment and represents the first thoroughly practicable and rational form of local and constitutional selenium therapy. It is accessible to physicians everywhere, requires no special technic, is innocuous in the doses indicated further on, and free from discomfort for the patient, no matter how far advanced the course of the disease.

Messrs. Schering & Glatz, New York, the exclusive agents for this product, will be glad to supply those interested with full information regarding the extensive selenium literature, showing that the underlying principle of this therapy is by no means a new and experimental one, but that it rests on very well-established scientific foundation.